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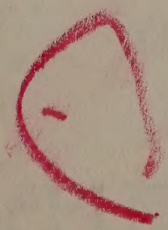

THE BOY SCOUTS' YEAR BOOK

6043

EDITED BY

WALTER P. McGUIRE

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and

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THE BOY SCOUTS
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Printed in the United States of America

To

The 8,000,000 Boys of Scout Age

in the United States

THE MEN WHO MADE THIS BOOK

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HON. WOODROW WILSON, President of the United States; Honorary President of the Boy Scouts of America.

COL. THEODORE ROOSEVELT, Former President of the United States; Honorary Vice-President of the Boy Scouts of America.

DANIEL CARTER BEARD, National Scout Commissioner, Boy Scouts of America.

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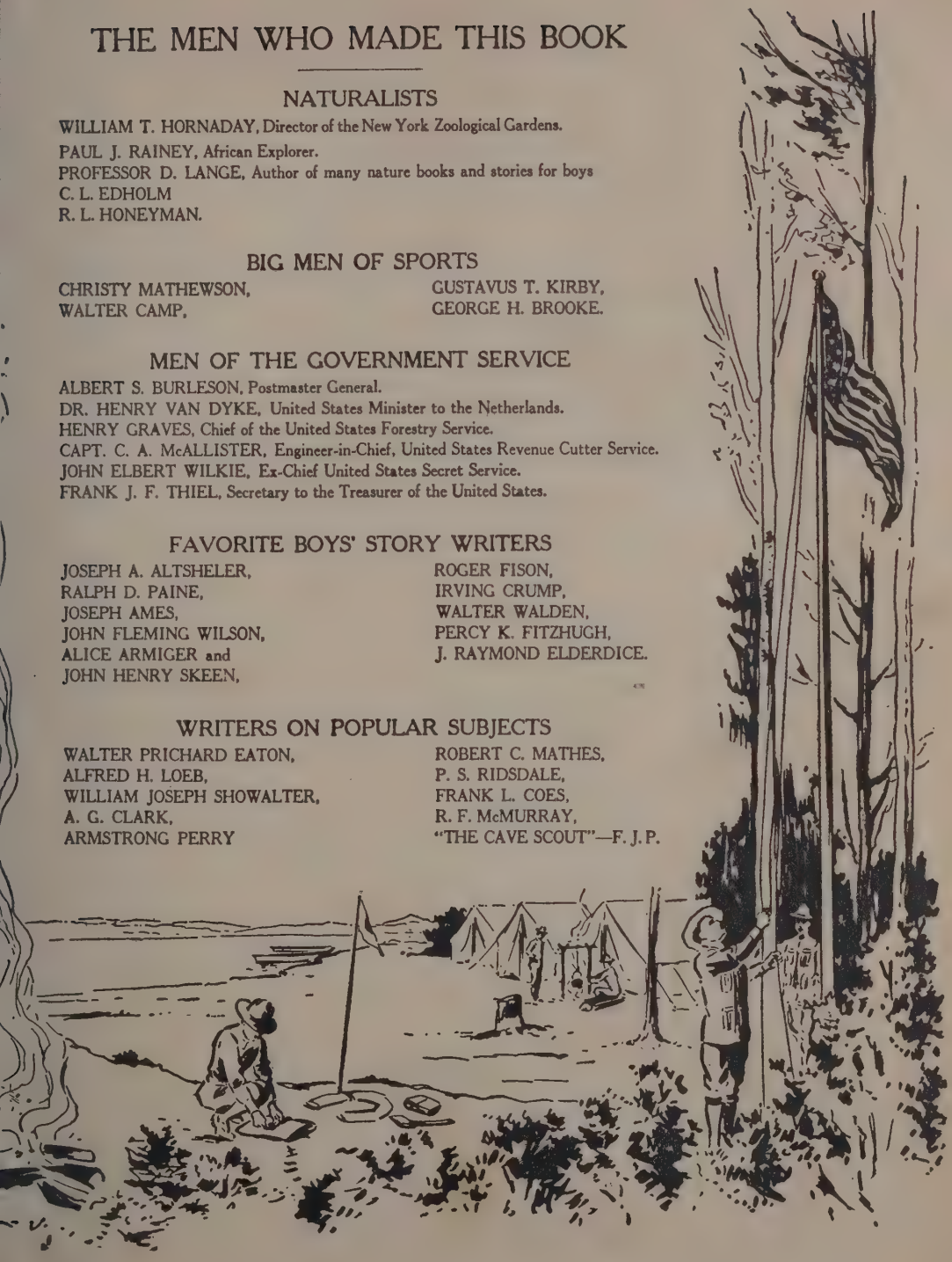

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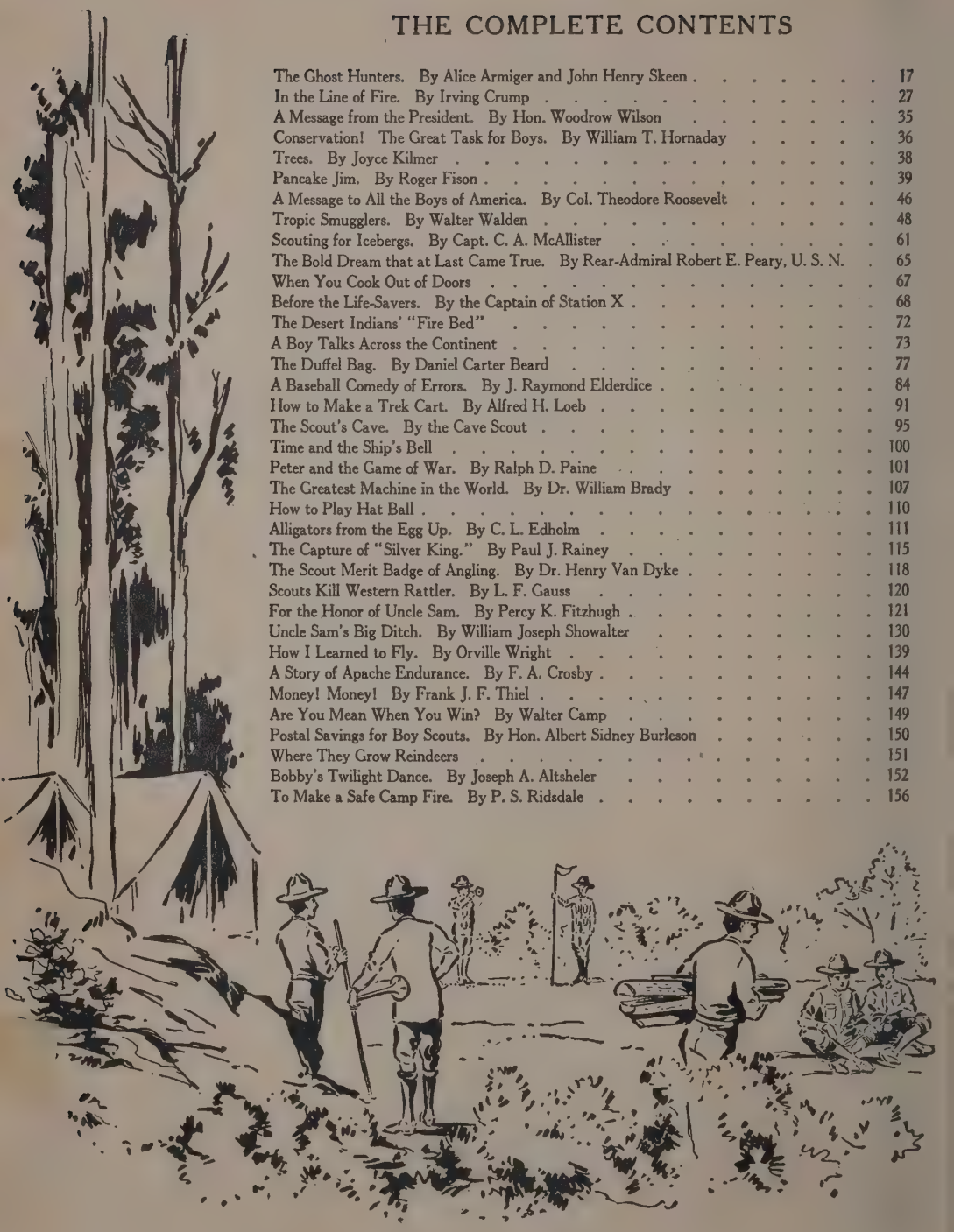

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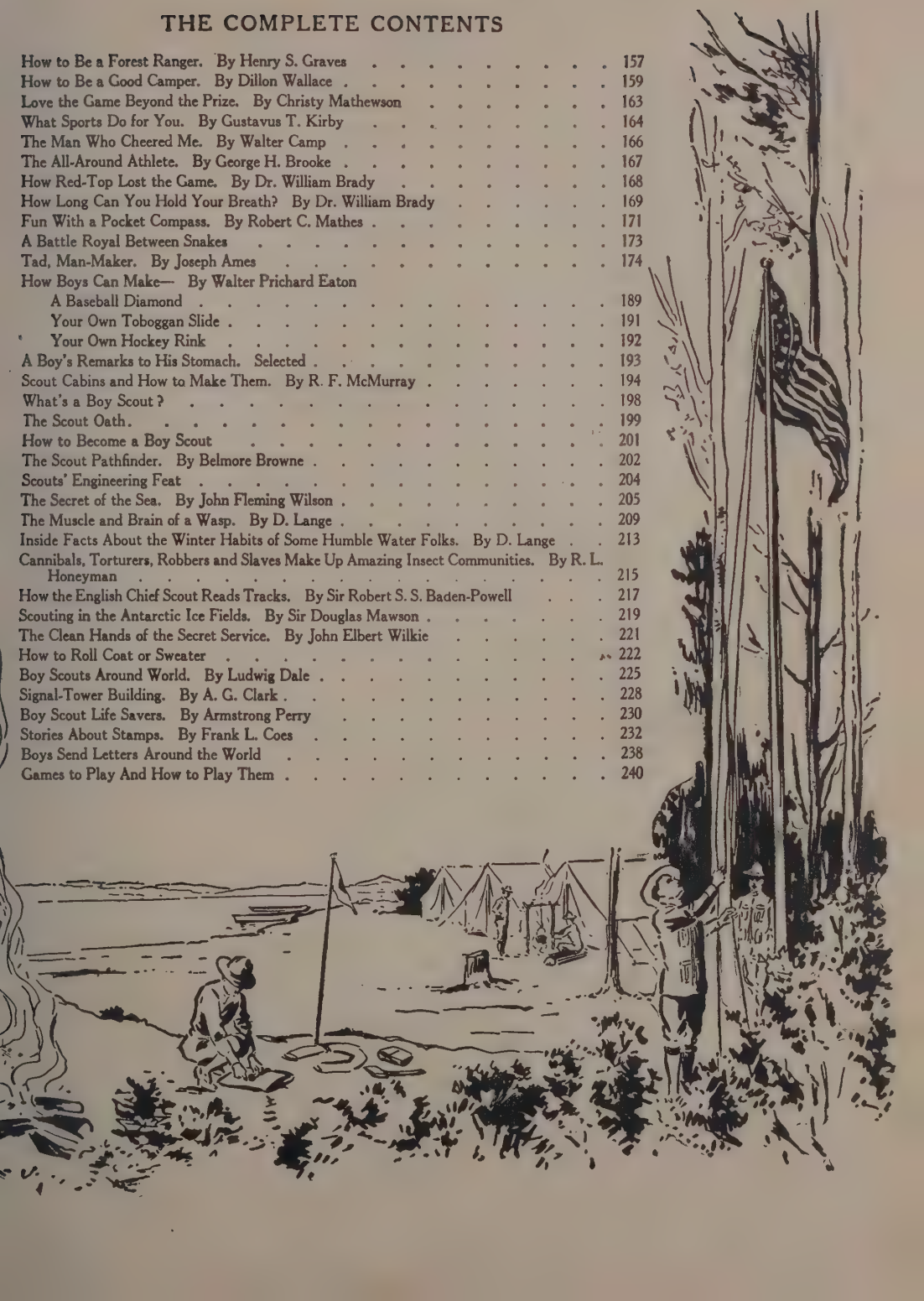

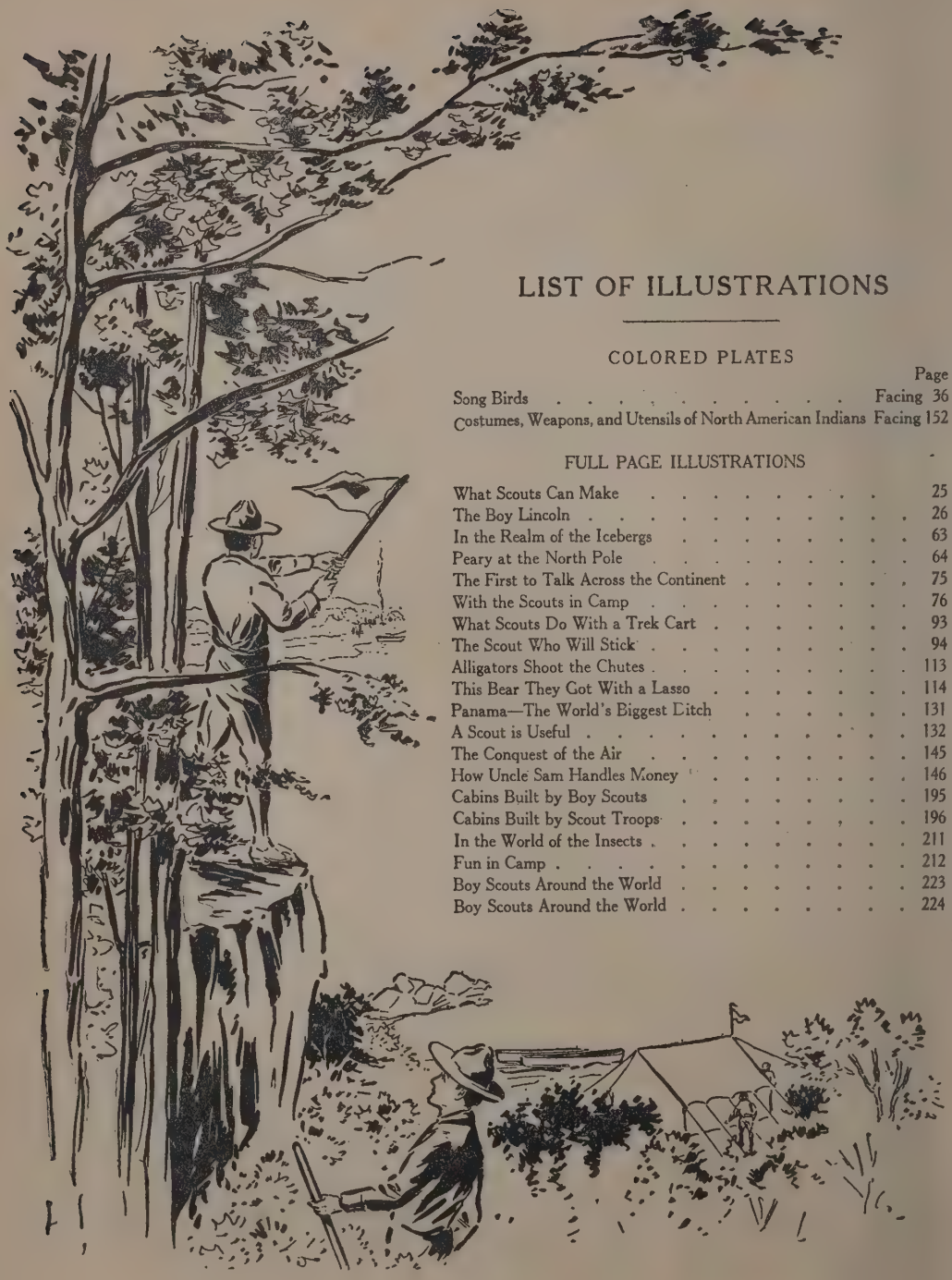

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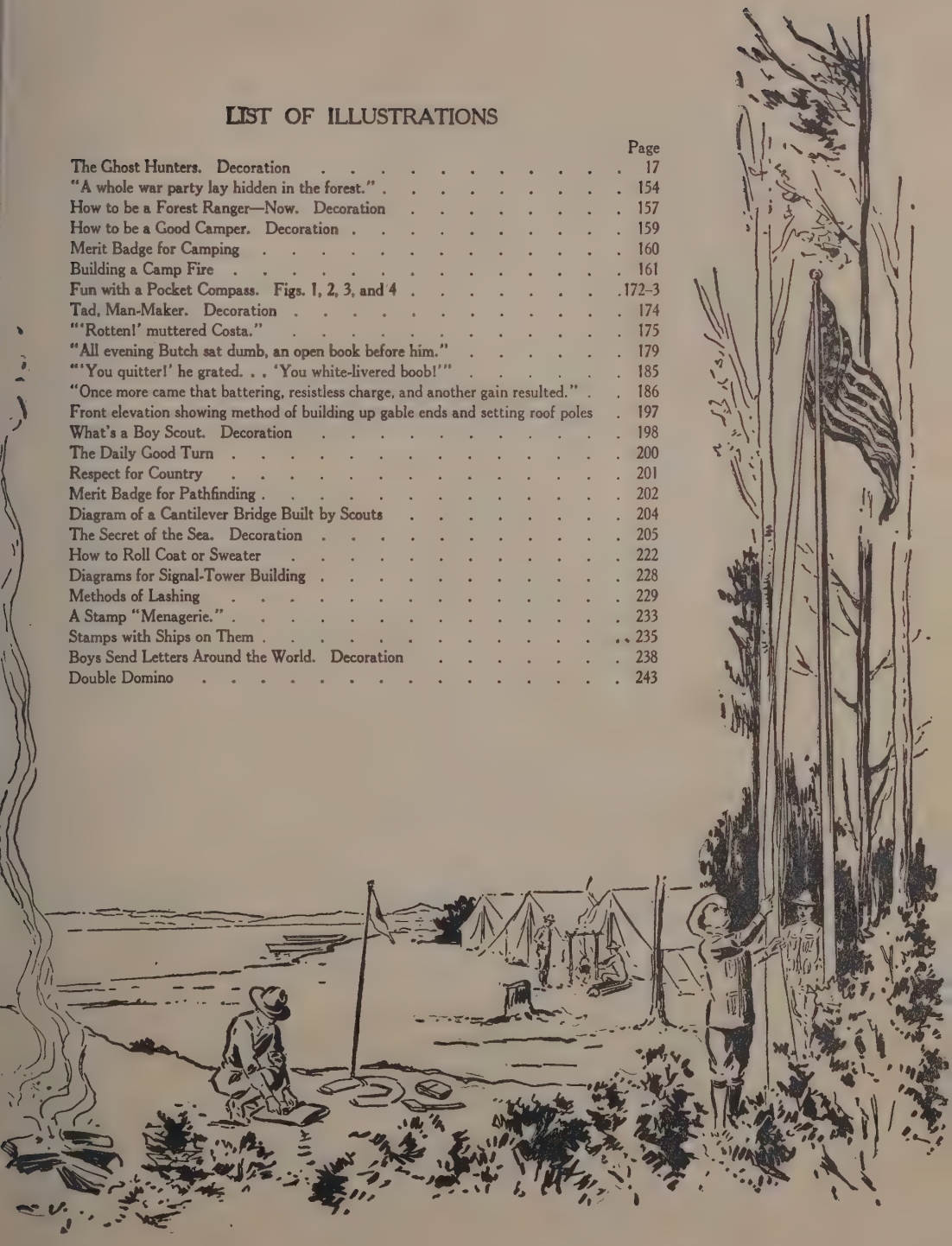

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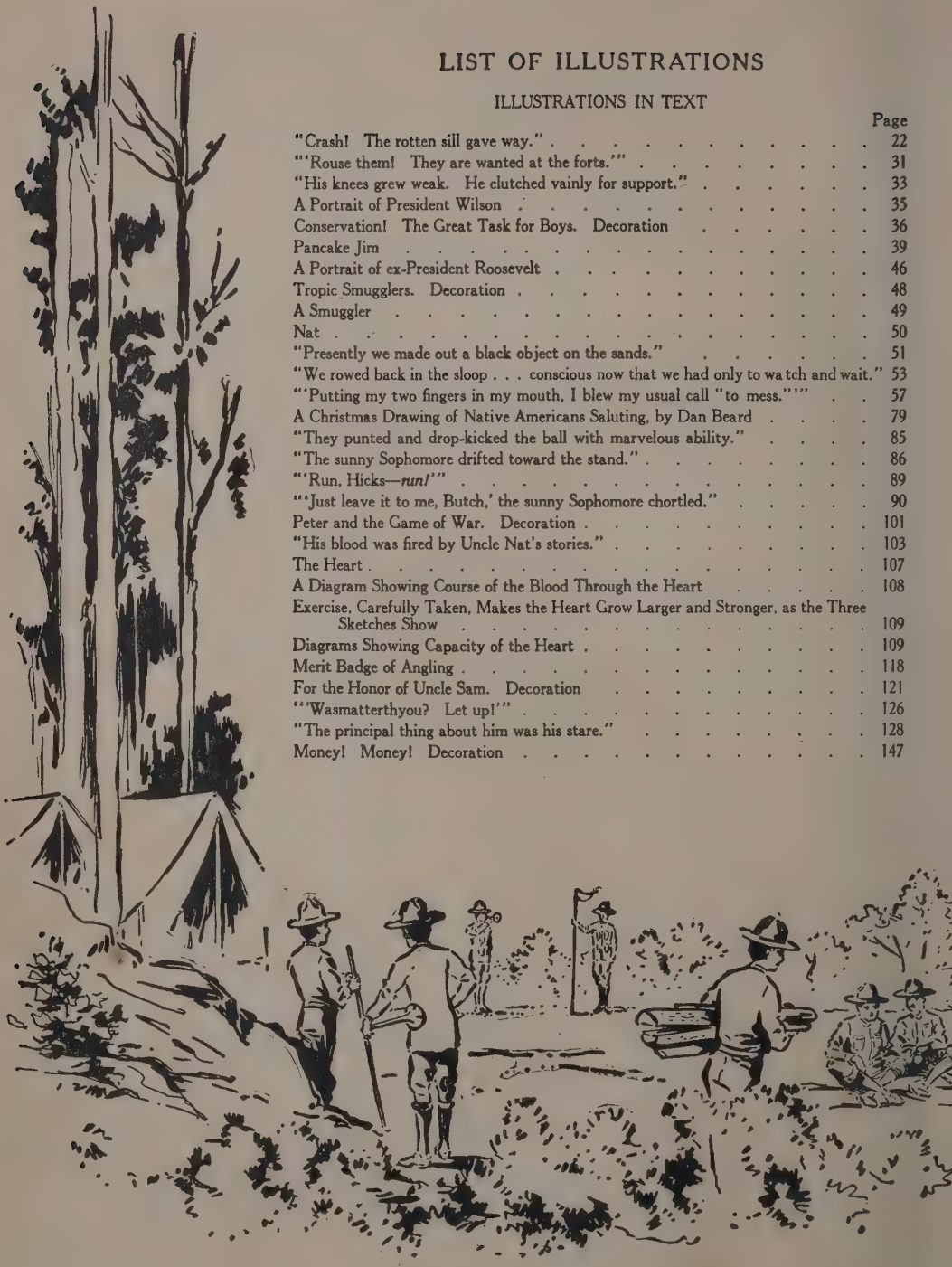


Foreword

THE growing boy and girl are the chief assets of our country. Our natural resources in mineral lands, forests and streams, sources of food, and our large business opportunities, important as they are, must be considered as of secondary importance as compared with the proper development of the citizenship of tomorrow.

The environment in which the boy and girl live, their educational opportunities and their manner of using their leisure time will largely govern their development. Of the 5,000 hours a year the boy is awake, the school room has but 1,000, and he is without a definite program for a good portion of the remaining 4,000 hours. The Boy Scout Movement serves to supply a definite program for this leisure time of the boy.

Through careful study it has been discovered that the average boy spends a great deal of his leisure time in reading. For this reason those responsible for promoting the Boy Scout Movement have definitely interested themselves in supplying an attractive and at the same time wholesome reading program for him. The Official *Handbook for Boys* has now reached a distribution of over 100,000 copies a year; *Boys' Life*, the official monthly magazine of the movement, is largely distributed, and during the last two years there has been made available, with the aid of a strong Library Commission, a special edition of books for boys, known as Every Boy's Library. Further, the Boy Scout Movement undertakes to list books which are worth while, and is prepared to give advice when requested as to books which are not worth while.

An opportunity has now been presented for the Boy Scout Movement to go a step further in its desire to help in providing beneficial reading matter, by co-operating in the publication of a Boy Scout Year Book. This, the first of a series of annual publications of this character, contains stories, articles and illustrations which are taken largely from *Boys' Life*. Their publication in this volume will help to preserve in a more enduring form much of the splendid material which eminent men (public officials, educa-

tional leaders, naturalists, explorers, handicraft experts, scout leaders, fiction writers, humorists and artists) are providing for current publication in the scouts' official magazine.

To all of these men the thanks of the Boy Scouts of America are extended—and particularly to Mr. Daniel Carter Beard, who serves as associate editor of *Boys' Life* without compensation save that satisfaction which comes from knowledge of greater joys and benefits brought into the lives of boys.

James E. West

Chief Scout Executive

The Ghost Hunters

BY ALICE ARMIGER AND JOHN HENRY SKEEN

There is a famous story of a gunner who carelessly let a cannon break loose on a ship at sea. Afterward, with great skill and courage, he secured the gun, saving the ship and his comrades' lives at the risk of his own life. His General said:

"Courage ought to be rewarded and negligence punished."

He conferred the cross of St. Louis on the man and then ordered him to be shot.

This is the story of three Scouts who disobeyed, and what came of it.

'MEMBER that old house of Warfield's across the bay in the black pine grove?" asked Tenderfoot "Spots."

"Sure," replied Second-class Bill, gruffly; "we've poked all through it many a time."

First-class Ed, with the added dignities of service stripes, merit badges and patrol leader's bars, did not join in. The three crawled into their tent and began to undress, talking in undertones, for the camp patrol was abroad. Spots' whisper was awestruck.

"When I paddled over there the night Stuffy was lost, I saw—I've been kind of afraid to tell about it—but—there was a red light flashed up all of a sudden, and something that looked like a man, real black in the window—the one you can see from the bay, you know. An' then the light disappeared. An'—an' we *know* there's nobody in there!"

"Aw, forget that," sneered Ed, "you saw a red sunset or a hobo's campfire, and got scared."

"Didn't get scared!" retorted Spots indignantly. "No more scared than you or Bill 'd been!" This was a sweeping claim, for the other two were scouts of proven courage, and Spots had his spurs yet to win.

"Dare you right now to go over there!"

"Keep cool, tenderfoot," broke in Bill.

"Ed, let's do it to-morrow night, all go together. Want to go, Spots?"

The freckled-faced boy, who answered gladly to this name, wavered. "You fellows didn't see what I saw," he answered slowly. Then in a moment, his mouth hardened. "I'll go," he said.

Reveille! Followed by a chorus of sleepy grunts and groans, and the usual cries, "Rotten! Get a bugler!" and such. After setting-up drill, the long, towel-draped line straggles down to the beach, with water funks sneaking out and being nabbed by the watchful Scoutmasters; the breathless plunge into the water, racing on the hard wet sand, rub-down, sketchy toilettes, mess-call, breakfast—and the day in camp is begun.

Spots was assigned, with Dirty Duffy and Hunks Humphreys, to go for the mail. This share, at least, of the camp work was sought after. It brought an hour's canoe trip and shore leave in the summer colony nearby, with possibilities of cakes, pickles and ice-cream sodas, if the pocket money held out. This privilege was given in turn to those who had failed to fall from grace during three days, more enduring virtue not being in the nature of boy.

"I give you pass, and you go—now," said the Director, in his even voice, "and you come back by eleven, sure-lee, because we will all be wanting our home letters," and he pushed their canoe off with his foot, and stood watching them beneath his hand—this son of the savage Sioux, with his grave and polished manner, his correct English speech, a wise and kindly philosopher.

"Mail! mail!" yelled Two-Bits from the pier where he could see the flashing paddles of the returning canoe. "Mail!" shouted Canute Nilson, the Great Dane, from the headquarters porch. The whole camp swarmed to the beach.

Spots was overboard before the canoe touched, at imminent risk of danger to all on board, splashing through the shallows to be the first to tell.

"Gee, Chief, there was a big robbery over at Royal Oak!" he said breathlessly. "We heard all about it an' went to see the place!"

The approach of the mail bearers was usually the beginning of wild commotion, with all manner of schemes to wheedle letters and packages from them before the appointed time of distribution, and sudden bosom friendships, based on a rumor that Crazy Horse would receive candy or a cake from home; but to-day these are forgotten. The Director, with an experienced hand, impounded all the mail, and said: "We will hear what you say, and then we will have the mail. Be brief; an Indian is brief and exact with his news."

Spots ran on eagerly.

"Mr. Harrison's house was broken into —that big house on the point, you know, and they got all his silver, an' tried to shoot Tom Harrison, 'cause he heard 'em and went down stairs with his gun an' he thinks he hit one——"

"That's right," chimed in Hunks, "we saw the bloody footprints on the porch, an' the place where they sawed through the shutter. They got away, an' nobody knows who did it!"

"Chief," Ed blurted out, "let's get up a poss—a what-d'ye-call-it, an' hunt them down!"

The Director smiled. "I know it would be fun," he replied, "but we are not here for that. We have a busy day."

Before it was quite dark, the stirring notes of "Assembly" rang through the

camp, and caused a scurry of preparation. All day long, each after his own fashion, the three had been in a turmoil of excitement over the adventure planned for the night, though outwardly bearing an unconcerned demeanor worthy of the Director himself. Bill was the only one who had made plans; he was the designer of enterprises, recognized by the other conspirators as such.

"We'll take our flashlights and some rope, and wear sneakers," he ordered, "an' Spotsy, you get the paddles from the office and hide 'em good down by the wharf, an' we'll take the little canoe."

Two-Bits, going from tent to tent, stuck his head through the flap, and called "All come to council!"

"All right!" yelled Spots, and fired a shoe at the head, which disappeared just in time. The three wrapped themselves in their blankets, and strolled to campfire. "We can roll these up, an' hide 'em in the woodpile when we go," whispered Bill.

Tremors crawled along Spots' backbone. He looked at the fire, which seemed to form a magic globe of light, enclosing all safety, comfort and good-fellowship; at the circle of blanketed forms around it; and at the formidable upstanding figure of the Director in his Sioux war bonnet. Then he glanced at the sky, where a heavy cloud bank was lowering from off the bay, blotting out the stars. He wondered if Ed and Bill felt what he felt, but he said nothing. The boys lay down at the outer edge of the big circle.

Campfire was great that night. There were thrilling detective stories, wrestling, Irish jokes, songs that quieted them. At the end, the Director said:

"That is all. We had a grand day; now to sleep. The guard will wake these," pointing to some small figures who had already succumbed, "not kicking them, but gently. Then in ten minutes 'Taps.' Good-night."

Ed, Bill and Spots melted into the darkness. They met at the woodpile and stowed their blankets there. They could see the lanterns of the guard bobbing about at the upper end of the camp street. It was the duty of the guard, besides repelling pigs and horses and watching for sleepwalkers, to make hourly rounds (as long as he stayed awake), and account for the boats.

"We'll lay low here till they pass," said Ed. Soon the patrol passed quite close. "Go count the boats, will you, Kack?" said Crazy Horse, the corporal, to his curly-haired aide. Kack returned promptly. "Six rowboats, three canoes, and the Sea Scout anchor light burning, all O. K.," he reported.

"All right," said Crazy Horse, "guess we won't have to look at 'em any more tonight."

"Chief's orders—look at 'em every round," retorted the conscientious Kack, and they went off arguing.

"Now!" hissed Ed, and they slipped down to the beach. Swiftly and silently they slid the canoe into the water; then they were gliding across the black still surface, noiselessly as a shadow. Behind them the campfire cast a faint red glow upon the trees.

Folly Quarter, the haunted house, was on White Sister island, which was uninhabited, and faced with a broad white beach toward the sea. It was an exposed and weatherbeaten shore, where ships had been wrecked. The house had been begun in the grand manner by one of the last men of an old colonial family fifty years before to receive his bride. The marriage was never made, and the house was never finished. The first floor had been roofed

over, but the walls ended in jagged outlines of brick and stone. Piles of weathered lumber, and great cubes of granite littered the grounds, with weeds and mold crawling over them, and haunted by sleek snakes. The dismal ruin and its materials blackened and rotted together. A melancholy avenue of gloomy firs led to the door.

"We're right now; I see the house. We better go quiet," said Bill, as he swung the canoe toward the strip of white beach.

"Aw, what d'you want to be quiet for?" blustered Ed. And then, after thinking an instant, "You—you don't think there's anybody here, do—do you, Bill?"

"Don't know," returned matter-of-fact Bill shortly. "We're here to see."

They landed and dragged the canoe up into the sand.

"Let's go around to the back," whispered Ed. "I know we can get in that way." They moved quietly and without talking, though they scarcely knew why. They stole up the steps, Ed, Bill and trembling Spots.

"Easy, now," said Bill, with his lips to Ed's ear, "that latch 'll make a racket."

"It didn't," answered Ed softly, and thrust his fingers under Bill's nose. Bill sniffed a strong reek of fresh coal oil.

"Holy Cats!" he burst out, but he kept his voice low. "Somebody's been here. Don't let on to Spots. No lights!"

They were inside now, feeling their way along the wall, step by step in the blackness. Spots spoke in a strange voice.

"Bill, it don't smell right in here. 'Member how musty it was before? An' how thick the dust was? Feel on the floor!"

Bill stooped and rubbed his hand over the boards. The dust of years, which had covered the floor like a carpet, was gone.

"Draft blew it off, I guess," whispered Bill boldly, but in his own mind he was not sure.

"It does smell funny, though, like—What's the matter, Ed?"

Ed had emitted a queer stifled grunt, and instantly fell heavily to the floor.

"I tripped over something," he muttered. "It's *alive!*"

Bill dropped beside Ed, and feeling blindly around, put his hand on a great warm hairy body, shaken with great throbs. He jumped. "Gee, what is it?" he stammered. "Got to have a light!"

Spots flashed a bright circle on the floor. An enormous ugly white bulldog lay sprawling at their feet, in an unnatural posture that was neither of life nor death. It was gasping for breath. Cold thrills shot through the boys as they stared.

"He—he ain't dead!" said Bill stupidly.

"He ain't asleep," returned Ed, in an awed voice, "'cause I fell on him hard enough to wake a mule. . . . What're we going to do? My head aches!"

"Keep on—see it through," said Bill grimly. "If we can get out of this room, there's a long hall that runs right through to the front door an' then——"

The circle of light around the dog wavered a little and then went out; they heard Spots' flashlight fall on the floor.

"Where's Spots?" broke in Ed's frightened voice. Bill flashed his light. The tenderfoot had sunk down and lay helpless, his head rolling from side to side, fighting for breath. Both boys noticed his freckles stood out on his white face.

"Quick! Quick!" hissed Ed. "It's the air here—something wrong—my head's spinning."

Bill wasted no words. He unhooked the coil of rope from his belt, knotted a bowline around Spots' heaving chest, and

passed the end of the rope to Ed, who was in front.

"Down—it's not so bad near the floor, and crawl out," he said.

So they did, dragging Spots behind them; and when they had got into the passage Bill closed the door of the frightful room and threw himself on the floor, sucking in the cool fresh air of the hall in great gulps.

"That was pretty bad! Thought I couldn't hold out . . . All right now—let's 'tend to Spots an' get out," he said.

Spots had recovered consciousness. They splashed water from the canteen on his face and chest; they helped him to breathe by pressing on the small of his back; and after a few minutes' rest, he declared himself quite ready to return to camp. They tip-toed down the long hall toward the front door, the boards cracking beneath their steps. Ed was fumbling around the knob.

"It ain't locked," said Bill. "I looked the other day—the bolts and hinges all rusted off long ago."

"It might fall down," returned Ed. "Ain't there another way out? I'm goin' to try here."

He turned aside into a large room, planned for the grand parlor of the house, and the others followed.

"Try the windows," whispered Bill.

"S-s-ssh! What's that?" hissed Ed sharply. There seemed to rise from beneath their feet a soft muffled beating, and through the open cracks between the great stones of the hearth a dim, wavering red radiance shot up into the room. There was the same tainted air as in the place where Spots had been overcome.

They threw themselves flat on the dusty boards and scarcely breathed for what seemed an endless time. Then Ed, who was near the hearth, slowly dragged himself a few feet forward, looked down through the cracks, and came sliding back, pulling the others toward the hall. In a moment they were outside the room.

"What'd you see?" demanded Spots and Bill eagerly.

"Two men—down the cellar!" Ed was wildly excited; "Got a little forge an' a fire—melting and beating up silver—they're——"

"—Harrison's burglars!" Bill broke in. . . . "We'll never get through that room now—they'll sure hear us," he continued. "We'll have to try the door again. Come on."

The heavy oak door had swelled and was wedged in its frame. Its bolts and hinges were gone, as Bill had noticed it. It was just possible that they could force it open wide enough to slip through, and yet keep it from falling. They set to work quickly and quietly.

"'Most enough!" gasped Ed, out of breath, pushing away at the gap, which was just too narrow. "All together now!"

The three threw themselves as one against the door, and—*Crash!* The rotten sill gave way, and the massive door thundered down with a noise like an explosion, which reverberated down the long hall.

They stood breathless and frightened for a moment and then began to think quickly. As yet, all was quiet.

"They know we're here. Let's run for the canoe!" cried Ed desperately.

"Never make it. They'd get out and catch us," returned the level-headed Bill. Spots danced with thrills and fright. Suddenly Bill almost yelled:

"I've got it! The cellar door! Only way out for them, an' we can lock 'em in! Spots, you go to camp for help, *quick!*" And Ed and Bill dashed around the house, while the tenderfoot ran for the canoe.

One side of the heavy cellar door was open. As they rushed around the corner at top speed they heard heavy steps beating along the cellar floor. Ed seized the

"Crash! The rotten sill gave way."

open door, raised it, and slammed it down, throwing himself upon it with all his hundred and thirty pounds of bone and muscle.

There was a muffled curse from the cellar, and in a moment Ed, lying prone across the door, felt himself lifted bodily from below.

"Quick, Bill, the lock!" he cried. Bill was flashing his light frantically around, and at last found the lock. Throwing himself down beside Ed, their combined weight crushed down the strong and desperate men below—just low enough for Bill to snap the fastening.

The boys thought they had a breathing spell.

"That'll hold 'em," said Bill anxiously, flinging the sweat from his face. "Wish Spots would hurry!"

Ed walked a little way toward the place where they had left the canoe and stood straining his eyes and ears. The prisoners had thrown off all pretence of concealment. They were cursing and yelling, throwing themselves against the door and battering it with their fists, but suddenly they were quiet.

"Here quick, Ed!" called Bill, who was listening at the door. "They've gone away. They're up to something sure. I guess they're looking for another way out."

The boys listened for some minutes. This was worse than the racket and cursing, for now they did not know what would happen, and were in terror for fear the burglars would find a way of escape. While Bill stood guard over the door, Ed ran again down toward the shore. There was no sign or sound of Spots. He ran back. "Don't hear a thing, and can't see," he said nervously. "Gee, but I wish Spots would come back!"

"Here quick, Ed! They're coming!" exclaimed Bill. Ed bent over the door. The heavy hurrying steps came closer. They could even hear a hoarse whisper, "Let 'er go!" and instantly the door shivered under a powerful stroke.

"They've got an ax!" cried Bill. The boys stood staring at each other in wide-eyed terror.

Spots had run his heart out by the time he got to the beach, and was barely able to launch the canoe, but he got started in some fashion, and as he got his second wind paddled away with all his might.

His heart was heavy—his errand hopeless. He listened, fearing that any moment he would hear his comrades cry for help, but all around him was only blackness and silence. Still paddling desperately, he rounded the point. What he saw made him put his whole strength into one cry. Strung out before him were all the camp boats and canoes, tearing through the water, filled with scouts and officers, lanterns dancing, and oars creaking as the Scouts bent to them with all their strength.

"Help! Help!" yelled Spots again and again, and collapsed just as the Director's canoe shot alongside. Willing hands pulled him in and as he lay in the bottom, the Director, never pausing in his easy and powerful stroke, questioned him and got the whole story. "—an' they can't hold out much longer," Spots finished.

"The guard missed the canoe, and at once we all started out," was the Director's only comment.

Before his canoe touched, he leaped out, Scoutmasters and boys swarming after him. With an old campaigner's foresight, he had brought the two camp cooks, ex-United States cavalry, two-fisted, rough and ready Irishmen, and between Mahoney and Hogan he sprinted for the house, all the others trailing behind.

Flashing their lights before them, these three dashed around the house. They found one small khaki-clad figure tugging manfully at a heavy beam, dragging it toward the cellar door. Ed, with the strength of desperation, tears streaking his dirty face, was stretched across the door holding on, and shaking with the blows that crashed on it from below. The imprisoned burglars had broken their ax in their mad assaults, and were battering away, using a heavy scantling as a ram. Just as the rescuers arrived, with a splintering crash the end of the ram shot through the door within a few inches of Ed's head.

The Director sprang forward and tore him bodily from his dangerous post. Hardly had he done this when the door flew from its fastenings and the head and shoulders of a man appeared. A huge and frowzy head it was. The face was covered with soot, dust and blood. The man stared about him with angry eyes, but seemed taken aback at the men with lanterns.

"We are three men—not boys," said the Director quietly, "and I think you had better——"

"What!" roared the burglar; and he rushed for the Director, brandishing the broken ax helve over his head. Mahoney stepped quickly out of the shadow, and planted his big hairy fist behind the ruffian's jaw. It became a camp tradition that this classic blow lifted him six inches off the ground. Certain it is that he dropped in a heap, and Mahoney promptly sat on him, remarking calmly, "An' thot's all right."

"You blow me 'Assembly,'" said the unruffled Director to Crazy Horse, "and we go back to camp and to bed at once."

"But—but—Chief!" stuttered Ed excitedly, "there's another man in there—there were two!"

"Dinnis, ye go git 'em," said Mahoney from his seat on his prostrate captive, to Hogan, before any one else could speak. Hogan, perfectly willing, stepped forward. "Git him I will, Chief, if yez give th' wur-rd, though he's as big as Terence here, an' twict as ugly."

"No, you wait," said the Director. And before any one could stop him, he walked steadily down the cellar steps.

"He'll be shot! He'll be killed!" shrieked Ed, hopping wildly about. "Mahoney, Hogan, stop him! Go with him!"

Their army training had left its mark on both the Irishmen.

"He said shtay here," replied Hogan. "He kin take care of 'imself, eh, Terence?" And Mahoney nodded his red head.

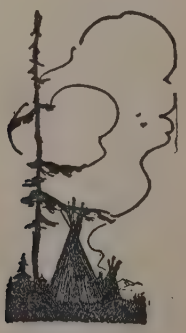
There was a long and silent wait. No one knew what to do; the boys were afraid to go into the cellar. They listened at the door. There was not a sound. At last the Director reappeared, dragging behind him a half conscious form—the other burglar.

"Charcoal gas," he said briefly. "They had a pipe from a forge to a room at the back, but they broke it, and the cellar is full of gas. This man is overcome. Their watch dog is dead."

The Director was moved to make a speech. He seldom did this, but the speech was, as always, short and unforgetable. He placed the three in front of him; and all the others were grouped around. He said:

"We have come well out of this business. I commend——" (this was the sword-stroke on the shoulder of the new-made knight). "I commend the Scout who, through faithfulness to his duty, discovered that the canoe was gone. I am obliged to Mr. Mahoney and Mr. Hogan. A *man* does not need to be commended. These three here have shown bravery—American grit. I commend them." (With these words Spots joined the honorable company of Scouts of unquestioned courage.) "These same three left camp at night without permission. For three days they will not leave camp nor swim, and for those three days they will supply all our wood and water, and do kitchen work. . . . Now, back to camp."

Perhaps the Director had read Victor Hugo's "Ninety Three." Who knows?



What Scouts Can Make

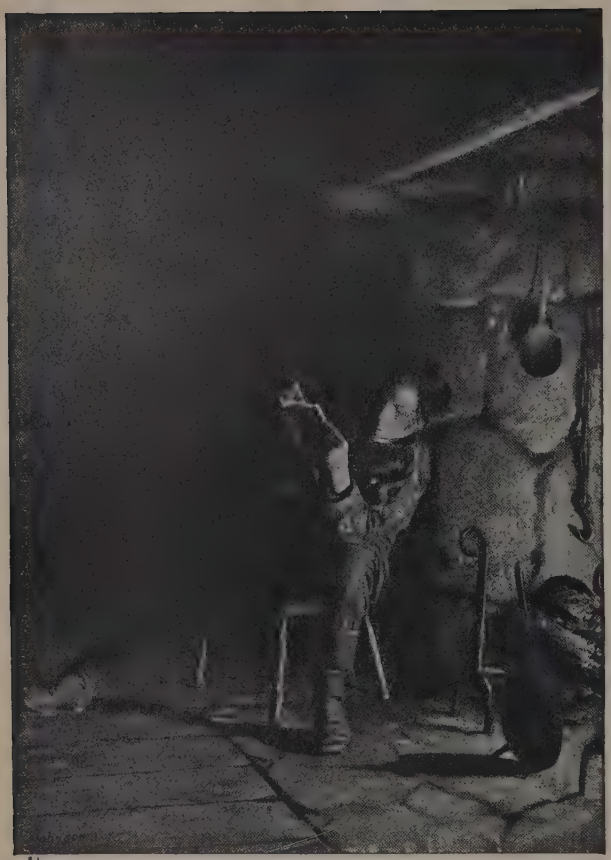
Forty-foot Span Cantilever Bridge Built by Moscow, Idaho, Scouts over the Potlatch River

Hawaiian Scouts Erecting a Signal Tower in Honolulu

Chicago Scouts Weaving a Mattress on Their Camp Loom

A Strong Bridge Erected by the Engineers' Patrol of Troop 5, Plainfield, N. J.

Photograph from Eagle Scout Charles E. Rice



The Boy Lincoln

By G. ELLIOT

BESIDE the flickering cabin fire
He feeds the flame of his desire
With books the neighbors lent.
The ruddy embers cast their glow
On that strong face which ponders so
On printed page intent.
Whatever he can get by chance
Of fact full much, of small romance,
The boy who conquers circumstance,
The mind on knowledge bent.

Outside the forest stretches wide,
The cabin huddles by its side
A single spot of light.
The only sounds, a night owl's cry.
The many treetops' quivering sigh,
The bleak wind's eager flight.
Across rough fields where Abe must drudge,
Along the mud road Abe must trudge,—
The homely tasks he does not grudge
To earn his books at night.

In that rude room of long ago
With printed page by firelight glow
What boyish visions start!
No prophet with inspired sight
Foresees in what crusade of right
The boy will play his part.
The world looks back a little space
And knows that time can not efface
The firelight glow upon his face
That passed into his heart.

The picture of Lincoln reading by the cabin fire is from Hill's "Lincoln's Legacy of Inspiration," by courtesy of the Frederick A. Stokes Co., publishers. The other illustration is from "Abraham Lincoln," by James Baldwin. Copyright, 1904, by the American Book Co. Used by permission.

In the Line of Fire

A Belgian Boy and His Invention Caught Under the Big Guns of Liège

BY IRVING CRUMP
AUTHOR OF "JACK STRAW IN MEXICO"

JEAN saw a streak of daylight where the tiny door from the mill opened into the great dark pit in which the water-wheel slashed around ceaselessly when the sluices were open in the dam up above. He had crawled down there at the close of the day's work with his big wrench and a pocket flash-light in his hand, for he meant to tighten some of the bolts on the wheel's center. He was seated astride the huge, slime-coated shaft, working away energetically, when the light from the doorway pierced the gloom.

"Ho, Jean! Jean, come up here. A dray from Liège has arrived," he heard his brother René call from above.

"A moment, brother. One bolt more is to be tightened first," he shouted back. "It is your motor, Jean, I think," called René.

"My motor? Good!" said Jean, as he hurried the work at the rusted pin. And had one been able to see his face by the light of the tiny pocket flash, one would have marked a look of eagerness that transformed his countenance at the mention of the word "motor." In truth, he became so excited that he hardly waited to test the bolt before he began to climb between the huge blades of the water turbine, and this to the imminent risk of his life, for to slip and fall to the bottom of the wheel pit would mean a fractured skull, perhaps, or a broken neck.

He reached the little door finally and, pushing it open, rushed through the mill and out in front to where a horse dray was waiting. René was standing idly by while the driver lifted down a fair-sized white box marked with the name and trade-mark of the largest machine manufacturer in Liège.

"Here, I'll lend a hand," shouted Jean, as he came out of the mill.

"No, it isn't necessary," replied the driver as the box was deposited on the ground; "that's the lightest motor I ever delivered."

"Is it, really?" queried Jean, a pleased smile appearing on his fine, clean-cut face.

"It is, young man, and if you will sign this receipt I'll be quit with you," said the driver.

Jean made haste to scrawl his name across the page of the delivery book. Then turning, he shouted in ecstasy to his older brother:

"René, the motor is here. Now for the realization of my dream of a year. In three days I hope to give you a ride on the first practically noiseless motor cycle ever built in Belgium. Indeed, I guess it

is the first in the whole world. Are you not enthusiastic?"

"Oh! I am interested, brother, but for the life of me I can't see why you should spend so much money on a plagued old machine when you could have such a good time on a fifth of the amount and put the rest in the bank as all thrifty Belgians should," replied René.

At this point M. Philippe Bastian, father of the two boys, came out of the mill.

"Ah, that is it, my thrifty René," he said; "I like to hear you talk thus. Jean here does not know how to save. He spends all his money, and some of mine, too, on tools and metal. Why can he not be contented in the mill as I have been these many years?"

From this it is not hard to gather that M. Bastian was not entirely in sympathy with Jean's mechanical aspirations.

"But, father, I am sure this will prove a valuable investment. If my invention succeeds, and I am certain it will, there will be fame and fortune without end. And, father, is it wrong to spend my money this way? I prefer to work in my little shop to carousing or smoking. Is it not better that my money is invested so than in tobacco, for instance?"

"Yes, Jean," said M. Bastian in pleasanter tones, "you are a good boy, and I sincerely hope that something worth while will come of all your hard work."

"Thank you, father," said Jean, as he shouldered the white box and started up the outside stairway that led to the loft of the mill and his little workshop.

"I'll be down in a minute to help René prepare dinner," he called from the landing. But when he had deposited the case on his long work table he could not resist the temptation of prying off two boards and looking at the polished machine inside.

Philippe Bastian was a widower. His wife had been dead these five years past and he and his two sons, René, who was nineteen, and Jean, who had just passed sixteen, had been living alone in the humble little cottage across from the mill ever since. They were the millers of Jupille. They earned their daily bread by grinding wheat into flour and carrying the bags to Liège, a mile distant.

Since they had left school Jean and René had daily donned long white aprons and toiled in the mill, where the three sets of great crunching stones turned round and round incessantly, pouring tiny streams of flour from their hoppers into the bags the boys held to be filled. They entered the mill at daylight looking like perfectly normal human beings, but in less than an hour they could not be told from ghosts so white were they with the flour dust that floated in the air. The wheat flakes bepowdered everything. They had gathered in every chink and cranny until the interior of the mill looked as if it were perpetually lined with snow.

On alternate days Jean and René would brush themselves free from this mill dust at three in the afternoon, and hitch two large Belgian hounds to the dog wagon. This vehicle would then be loaded with the day's output of grist and carried down along the right bank of the River Meuse, past the frowning fortifications and into Liège, there to be disposed of to M. Bastian's customers. Both boys enjoyed these trips into the city, for it gave them a chance, as Jean often said, "to shake the flour from out their hair."

But it must be confessed that the older boy looked forward to the trip with more enthusiasm than did Jean. While René was a hard-working young man, he preferred to spend his leisure time in some sort of frivolous, though innocent, amuse-

ment. Jean, on the other hand, devoted every moment of his spare time to work and study, for it seemed as if he could find no pleasure except in mechanics. Always he was building something in his workshop in the mill loft. And he was forever making improvements about the mill. For one thing he had wired the place and installed a little second-hand generator which he had bought in a junk shop at Liège. Thus was the mill provided with electric lights, though they were little used by the miller himself, who never worked at night. It seemed as if Jean worked always. His light could be seen shining from the window of the loft frequently until after eleven o'clock.

He had conceived the idea of building a silently operated motorcycle. He reasoned that such a vehicle would be very popular if it could be made simple of mechanism and easily operated. He realized, from the start, that the whole difficulty lay in building perfect mufflers and a motor that would be both light and serviceable. In short, he found that he would have to improve upon the best machines that had been built up to that time. Undaunted by such a tremendous task, he set to work.

First he made drawings of a dozen different ideas, until finally he seemed arrived at a thoroughly practicable plan. This he outlined in great detail, working over each difficulty until he found a solution. In the meantime he constructed his own vehicle, building it from parts of old machines requisitioned from the various junk shops and foundries in Liège.

When finally his motor drawings were perfect, he filed preliminary papers with the patent office in Brussels under his father's name and sent duplicate drawings to a large manufacturer in Liège. It would cost Jean 200 francs, gruff old Janvarin, the foundry master, told him, because some of the parts were to be of aluminum. But the youth had been saving his wages against just such an emergency, and he was well able to pay the cost from his little account in the bank at Liège.

Janvarin, the bewhiskered boss of the foundry, was a good mechanic and an inventor of some note. He immediately recognized the possibilities in Jean's plans and became genuinely interested in the boy. Indeed, he had many a long chat with him, for almost every time that Jean came to the city with flour he stopped to learn the progress that was being made. The foundry master gave him some advice and also put himself out to hurry the work on the boy's machine, for he could see that Jean was very anxious to have it completed and delivered. In truth, the lad was so impatient that he could scarcely wait, and when finally it did arrive, on the evening in which this story opens, he could hardly spare time to eat his evening meal, so eager was he to get into the little workshop.

He helped René to make short work of washing dishes and cleaning up the cottage that night, and before seven o'clock the young inventor was climbing the stairway again to the mill loft. With nerves a-tingle he wrenched and pried at the boards on the top of the box as if he were about to set the motor free from its prison-like retainer. And when he finally viewed the shining machine in the glow of the electric light, his enthusiasm knew no bounds.

"Oh! if everything will only work out all right when the machine is assembled! Won't it be just wonderful?" he said aloud as he stroked the glistening sides of the new engine. Then, as if he realized that he was losing valuable time, he muttered, "Well, the only way to know how

the invention will turn out is to put it together and give it a trial. Here goes," and rolling up his sleeves, he started to work.

His shop took up the whole loft. On pegs about the wall hung rolls of wire, unused batteries, sections of telephone instruments, and a number of odds and ends that he had gathered up in Liège from time to time. The front end of the room was occupied by a long work-table, beside which stood the framework of his motor cycle. On this table was piled a number of gasoline tanks, pipes, couplings and the like, which he meant to fit together that night. Toward this he carried the motor. It was so light that he found no difficulty in lifting it, and it was so compact that his two arms could encircle it readily. It was no weight at all for a bicycle to carry.

Once again he paused and ran his hands caressingly over it before he left it to work on the other sections of the machine. The task of assembling these many parts was no easy one. They all had to be fitted together carefully and accurately before they could be fastened onto the framework of the bicycle. This took a great deal of time, and hour after hour Jean perspired over the work. Finally, just as he paused to rest he heard the far-off toll of the cathedral bell in Liège. It came, mellow and faint on the night wind, and the boy paused to count the strokes.

"Goodness!" he exclaimed, when the sound ceased, "here it is midnight, and I haven't half finished."

He looked at his work thoughtfully for a moment. "Oh, well, I can't be in too much of a hurry. It will take me tomorrow night and perhaps the next before I complete it. But then—— Well, won't René and father be surprised!"

After first taking a look about the little workshop and fastening both front and rear windows, he turned out the light and left the building. Outside the moon was just rising above the hills across the River Meuse and everything looked pale and weird in its silvery light.

Jean started to cross the road, but when he reached the middle of the thoroughfare he paused to listen. He was certain that he heard the far-off pounding of horses' hoofs. He looked intently in the direction whence the sound came, and saw a tiny light gleaming in the distance, as if someone had suddenly lighted a lamp in a cottage down the road.

Then the hoof-beats sounded again, coming closer.

"Whoever it is," said the boy, quite mystified, "he is out late and is riding hard."

Suddenly a light flashed in the window of the cottage beyond his own, and Jean heard high-pitched voices calling. One word he caught above the others. It sounded grim and ominous there in the dead of night.

"War!" he heard the courier cry.

It puzzled him, but even while he was groping for the meaning of it all the hoof-beats were resumed, and in the moonlight he could make out the phantom form of the night rider drawing nearer.

"Who are you? Speak quickly!" cried the man on horseback, as he drew rein at the sight of Jean.

"Jean Bastian, sir," said the young miller, very much startled.

"So, son of Philippe Bastian? Come, Jean, where is your father and your brother René? Rouse them! They are wanted at the forts. The Prussians are coming!"

But M. Bastian, always a light sleeper, had been awakened by the clatter of hoofs

and the challenge to his son. From his window he called:

"Ho, rider, what is the word?"

"War! Monsieur Miller. War is the

"'Rouse them! They are wanted at the forts.'"

word!" cried the cavalryman. "The Germans have declared war against France! They will invade Belgium for a path! King Albert calls you to arms! Be at the forts by daylight!"

War! The heart of Jean quickened. If the Prussians came that way, and it seemed certain they would, his motor cycle would be confiscated, or destroyed! Then all the year's work would be for naught!

But there was work to be done about the cottage, and the hustle and bustle of M. Bastian and René served to take the young inventor's mind off his trouble for a time at least. The father and eldest son were members of the national reserve regiments. Rene was in the infantry and M. Bastian was a gunner at one of the forts on the Meuse. Both were well-trained soldiers, as are all Belgian reservists, and also, like all other reservists, they were held in constant readiness for action, even to having their small arms loaded. First of all, old uniforms were brought out of the clothes closet and brushed. Then weapons were polished and cleaned and knapsacks and canteens filled.

"Jean, my son," said the father affectionately, "I can see nothing for you to do but pack up everything of value that you can carry and join the men and women who will take refuge in Liège. Certainly you cannot stay here. It would be unsafe; then, too, there will be no way for you to get food when the Prussians come."

"But, father, my motor cycle!" said Jean in alarm. The boy, brought face to face with the question of abandoning his invention, realized he could not do it.

"Ah! have a care, Jean. Do not prize the thing above your own safety. Close up the cottage and mill and go to Liège at daybreak. I cannot leave the dog team, for the animals will be needed at the forts as provision carriers. You will have to carry everything you want. Seek out the house of my friend, M. Du Blon, in Liège. His wife will care for you. Good-by, my son, and God bless you!"

Jean followed them to the door and watched until they disappeared up the moonlit road. Already reservists and refugees from the country districts beyond Jupille were hurrying past, bound for the protection they thought the fortified city would afford. To Jean, though, there was something more important to be considered than his own protection.

"Oh, if I had only been able to assemble the machine yesterday!" he groaned. "Then I could go riding off toward Liège and I wouldn't care how soon the Germans came."

Then suddenly he was stirred by a new thought. *"Ma foi!"* he exclaimed, "there may be yet time to get the machine together and the motor in place. Father says to leave early in the morning—by daybreak. I have still a few hours to work. I'll try."

He rolled up his sleeves as he crossed the road toward the mill. In the darkness of the lower room he threw over the sluice-lever and the mill wheel began to turn. This, of course, started the generator and gave him electric light in the loft above. Up the stairs he went, three steps at a bound, and in a few minutes he was hard at work again just where he had left off two hours before.

He was working against time, and realized it. Moreover, he was trying to accomplish in the few hours before dawn, work that would take him two evenings under ordinary circumstances.

Swiftly he manipulated wrenches and pliers. The perspiration dripped from his brow, and though he did not realize it, he was all but out of breath with his haste and excitement. Section after section was put in place and connected, until finally everything was ready to be attached to the bicycle.

Jean had become so engrossed in his work that he had forgotten to watch the time. Hour after hour had slipped by and a golden streak had appeared in the eastern sky. The morning mist had all cleared from the surface of the river and day was breaking. He had hardly noted the change.

The preliminary parts were all bolted to the framework of the bicycle now and he was just lifting the motor into place, when suddenly the deafening roar of one of the big guns from the fort split the air. This was followed quickly by two other reports just as loud, and Jean heard the angry shriek of shells high above the mill.

Then it burst upon him like a flash. He was too late!

From across the river came the sound of cannon, and the boy rushed to the window to look out. They were there! Thousands upon thousands of gray-clad Germans were massed on the opposite bank. Jean could see the artillerymen wheeling cannon after cannon into position! Already a dozen pontoon bridges had been started. Jean marveled at the swiftness with which the sappers pushed those clumsy structures out into the water.

The thunder of cannon from the forts at Liège was deafening now. Shells burst about the Germans thick and fast! One struck a partly built bridge and threw the pontoons high in the air. The lad saw the bodies of the sappers tossed in all directions. But other engineers took their places and started to rebuild the crossing. Pontoon after pontoon was put together while the guns from the fort roared away viciously and the German batteries on the heights across the river answered back.

One bridge was completed. Then came the infantrymen. Hundreds of them, thousands of them, swarmed across the bridge, and just when the structure was crowded to its limits a Belgian shell burst over it. The sight was hideous. Jean heard the shrieks of the wounded soldiers. Hundreds of them were in the water, only to sink out of sight before his eyes, for their equipment was too heavy to let them swim.

But another bridge just below the mill was completed almost immediately, and the infantrymen started to cross this, too. On they came, in spite of the bursting shells! They gained the bank below the mill! A score of them, a hundred of them, five hundred of them came. And

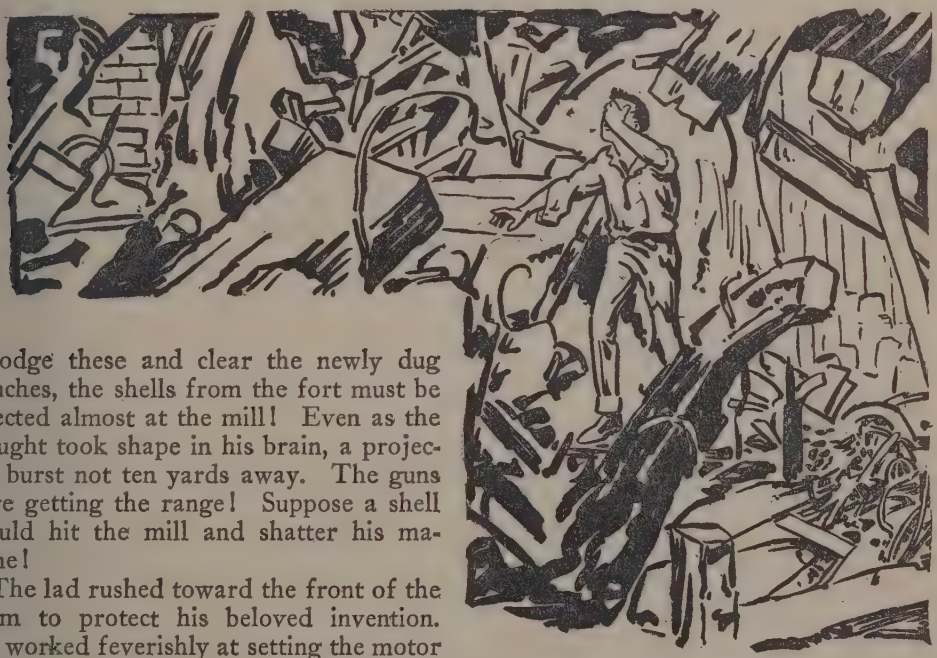
mmediately they swarmed up the incline hey began to dig themselves into long renches not fifty yards from where Jean vas watching. Then machine guns were ›rought across and set up. Soon they vere roaring away.

Somehow these machines awoke Jean to he danger of his situation. He realized hat the mill was in the line of fire. To dislodge these and clear the newly dug trenches, the shells from the fort must be directed almost at the mill! Even as the thought took shape in his brain, a projectile burst not ten yards away. The guns were getting the range! Suppose a shell should hit the mill and shatter his machine!

The lad rushed toward the front of the room to protect his beloved invention. He worked feverishly at setting the motor into place, for he had a vague idea of completing the thing and making a dash for Liège in spite of the Prussians. Bolt after bolt he placed. Soon the motor was solid. All that remained to be done was to couple this vital section with the rest of the mechanism and all would be ready.

Shells were falling thick and fast about the mill now. The concussion of each explosion shook the building. Once again he crossed the room to look out upon the battle. He stayed at the window but a moment only, for he realized that time was precious if he wanted to save his invention. He turned toward the machine again, his nerves pitched for a final effort.

But before he had taken a single step there was a deafening roar and a blinding flash! Jean saw the whole front of the building torn away! And before his very eyes the motor cycle was blown to a thousand pieces. His work of a year was blotted out forever!



"His knees grew weak. He clutched vainly for support."

The boy was stunned. For a moment he was speechless. Then he cried aloud in anguish. "Oh! it's gone! It's been taken from me! What shall I do?"

He was staggering across the room to where his machine had been, when suddenly the building rocked. There was the

sound of rending wood, then a terrible explosion, and the room was filled with a great white glare. At the same instant a huge piece of plank was hurled violently into the boy's face. Jean screamed with pain and clutched at his eyes.

Warm blood trickled down between his fingers! He was frightened. He took his hands away. All was darkness!

The awful truth dawned upon him.

"I'm blind! I'm blind!" he screamed. "Never again can I work or study!"

The realization was more than he could bear. His knees grew weak. He clutched vainly for support. Then he lost control of himself entirely and pitched forward on his face.

Until almost noon the artillery duel kept up. Under cover of the German guns the gray-clad men advanced until they were near the Belgian defense.

Suddenly bugles sounded within the forts. The great gates swung open and emptied forth thousands of cavalrymen. It was a dreadful charge. The Belgians cut and slashed great holes into the gray ranks until the Germans broke and fled in panic back to the bridges. Some reached the opposite bank, but hundreds of them were forced into the river, where they were drowned—where even those who could swim were drowned.

After the charge the troopers returned toward the forts in groups of ten or a dozen. Some went straight across the country to the forts while others took the high roads. One group, led by a gruff-looking, bewhiskered rider, whom the rest called Janvarin, took the river road, and as they cantered past the ruins of the old mill the big trooper's attention was arrested by the prostrate form of a boy partly covered with loose planking. He paused a moment, and recognizing the lad as Jean, dismounted and hurried to his side.

"Is he alive?" asked one man.

"Yes, his lips move," said another.

"He is talking. Quiet, men! Hear him? He says—'*the machine—the motor—my eyes*——.' What can he mean?"

"Ah, poor chap, he's out of his head," said someone.

But Janvarin knew that Jean was counting over and over again WHAT THE WAR HAD COST HIM.

A MESSAGE TO BOY SCOUTS

BY

WOODROW WILSON

PRESIDENT OF THE UNITED STATES

HONORARY PRESIDENT OF THE BOY SCOUTS OF AMERICA

On this page is given what the Nation's Chief Magistrate said to the Boys Scouts and the members of the National Council of the Boy Scouts of America at the White House, February 11, 1915.

I am sincerely glad to have the pleasure of this visit from you, and to have an opportunity to express my very sincere interest not only in the organization of the Boy Scouts, but in the objects that that organization has. From all that I know of it, and from all that I have been able to observe personally, it is an admirable organization, devoted to the objects that I myself thoroughly believe in.

There is only one rule in the world, and it applies to all professions, and that is that you are expected to "make good." No excuses are allowed in this school of life, and the only way to make good is to keep faith. That is the reason I like the idea of the Boy Scouts—because of their secure notion of being responsible to society. They are responsible to the people who live around them—to help maintain the standards of order and fidelity upon which the community depends.

You are recruits in the ranks that we all stand in, and that is to serve the country in some way that will tell, and that has nothing particular to do with our own personal benefit. The man who devotes himself exclusively to the development of his own character will succeed in nothing except to make of himself a prig. But if he devotes himself to helping other people his character will not only take care of itself, but it will grow to a very noble stature.

I have always maintained that, in the language of manufacture, character is a by-product. If you set out to develop it because you love it for yourself you will be an ass. If you disregard the consequences to yourself in order to serve other people you will make a noble gentleman, and that I believe is fundamental and sacred in an organization of this sort.

I congratulate you for belonging to it and hope you will honor it in every way by your conduct and allegiance.

Woodrow Wilson

CONSERVATION! The Great Task for Boys

BY WILLIAM T. HORNADAY

DIRECTOR OF THE NEW YORK ZOOLOGICAL GARDENS

THE natural tendency of civilization is to destroy the product and the choicest handiwork of Nature. Civilized man exterminates whole species of wild birds, beasts and fishes as no savages ever have dreamed of doing. If left alone the short-sighted, selfish and cruel members of the American nation would quickly exterminate all our valuable forms of wild life and our valuable timber and forests.

The ruthless destruction of the past must not be permitted to continue. It is both wasteful, wicked and suicidal. Hereafter, in the United States and its territorial possessions, not one tree should be cut down, not one bird, mammal or fish should be killed *without a reason* so good that it fully justifies the act.

The Army of Destroyers

The number of persons who now are determinedly bent on destroying the wild life and forests of North America for their own selfish purposes is enormous. The number of men and boys who annually go out with deadly firearms to hunt the pitiful remnant of game in the United States must be between 3,000,000 and 4,000,000!

Think of that army!

And in that army there are hundreds of thousands of men and boys who will shoot and eat our most valuable songbirds, woodpeckers, grouse and shorebirds whenever they can do so without detection. There are also thousands of persons who are so heedless and so wicked that they do not mind setting fire to forests whenever their carelessness escapes detection and there is no fear of punishment.

The Army of the Defense

Opposed to the great Army of Destruction is the numerically small Army of the Defense, which for fifteen years has been struggling to keep down the records of slaughter and protect the remnant of our wild life and forests. In this the National Government and the State govern-

SONG SPARROW.
MOCKING BIRD.
BROWN THRASHER.
HERMIT THRUSH.
CARDINAL RED BIRD.
WOOD THRUSH.
ROBIN.
SCARLET TANAGER.
VEERY.
BALTIMORE ORIOLE.
BLUEBIRD (FEMALE).

SONG BIRDS.

ents are assisting by every means they n command.

A great many good men and women are ruggling hard, and expending money, to eserve for the children and young peo- e of the future the remnant of the wild e that once made our country so inter- ting and so beautiful. To them the pro- ction of wild life and forests is a matter duty, a "white man's burden" that can- t be ignored by conscientious people. f course the mean and the sordid care thing about it.

It is now quite time that the Boy Scouts America should manfully take up and rry their share of this burden. But for e unselfish efforts of men and women ho worked hard in the past to protect ur interests, there would today be not ie wild bird left alive in the United ates for any of you to study and enjoy!

The Duty of Scouts

The Boy Scouts of today have a solemn ty in the protection of the remaining asts and birds for the Boy Scouts of morrow!

Merely to study the birds and delight- lly observe their habits is not enough. he demand of the situation is for hard bor and the sweat of toil in stopping aughter.

For too long have the people of all orth America enjoyed recklessly lib- al killing privileges which they should ver have had! All over the United ates our birds and mammals are being *terminated according to law.* All our rds, quadrupeds and game fishes must ve better protection; and it is time for e Boy Scouts of America to take up this use as one demanding constant effort nd constant sacrifice. It is a cause that ow seriously affects the market basket and ie dinner pail.

How Scouts May Help

Services in the defense and increase of wild life may be rendered by Scouts in the following ways:

Write school essays and address schools on the rights of birds, the value of birds to man, the duty of boys to protect them and the methods to be adopted.

Report immediately to game wardens or policemen all violations of wild life protective laws; make formal complaints against violators and give testimony at trials. In this every father or big brother should back up the Scouts!

In great campaigns for better laws help to secure the support of members of legislatures or of Congress, by writing letters of appeal and inducing others to do the same.

Secure organized club support wherever possible.

Prevent, at all hazards, all nest-robbing by boys who are not Scouts. (Scouts themselves never will be guilty of such offenses!)

Promote in every possible way the enactment of five-year closed seasons for all species of birds and quadrupeds (especially quails and squirrels) that are locally becoming extinct.

Encourage farmers to "post" their farms against all shooting.

Help post notices of new protective laws.

Kindness to Domestic Animals

To a body like the Boy Scouts of America it is necessary to mention the subject of kindness to animals only by title.

Every Scout is a boy of honor; and therefore no Scout ever would accord to a helpless animal any treatment that would be painful, neglectful or in any manner unjust.

A boy of honor cannot treat even a worm unjustly. He will remember that the cat, the dog, horse and ox are helpless prisoners *in his hands,* dependent upon his mercy and his thoughtfulness. It is only the meanest of men who treat their prisoners—or their faithful servants—with cruelty or neglect.

"The bravest are the tenderest." The real heroes of life always are those who protect and care for those who cannot protect themselves.

This is another subject that need be mentioned only by title.

Every American Scout knows, either by observation or by hearsay, the meaning of a bad forest fire; the marvelous quickness with which such fires get beyond control; the danger to human life; the awful slaughter of timber resources; the destruction of wild life, and the long disfigurement of the face of Nature. To start a forest fire wantonly is a crime, severely punishable by law; to permit one to start by slothfulness or lack of care is criminal carelessness, and is enough to strip any Scout of all his merit badges at one stroke.

But every Boy Scout knows all this, and may at once be ranked as a defender of the forests.

Trees

I THINK that I shall never see
A poem lovely as a tree.

A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;

A tree that looks at God all day,
And lifts her leafy arms to pray;

A tree that may in summer wear
A nest of robins in her hair;

Upon whose bosom snow has lain;
Who intimately lives with rain.

Poems are made by fools like me,
But only God can make a tree.

—Joyce Kilmer, in "Poetry."

Pancake Jim

BY ROGER FISON

AUTHOR OF "JOE'S CHRISTMAS EVE AT WHISTLING BEND"

JAMES NORTON walked slowly out of the dingy railroad station at Overland, and started across the now-covered prairie path leading to his ome. There was a troubled expression n his boyish countenance this morning, nd though New Year's as but a few days off, one of its pervading pirit of good cheer eemed for him. What ad at first appeared to e a piece of good for- une had terminated in most unfortunate cir- umstance.

The North Pacific ailroad agent at Over- and had wanted three veeks' vacation, and ames, having qualified or relief work, was laced on nights as elegrapher and ticket lerk, while George Havens, the regular ight man, was trans- erred to the day shift s agent. In order that the boy might ccept this temporary employment he was eleased from high school one week be- ore holiday vacation.

On the night of December 10, when ames began his first duty at the Overland depot, but one element of inharmony ex- sted. Havens was exceedingly prejudiced gainst beginners. He disliked seeing this seventeen-year-old boy receive salary at the rate of sixty dollars per month, which was the same figure paid Havens for night work, notwithstanding that Havens had railroaded for twenty years.

"Well, you just wait," the old-timer had predicted to a trainman. "Some night that kid will make a mistake. See how long his job lasts then!"

In spite of this ill-feeling, however, James performed cheerfully and to the best of his ability all tasks assigned to him, which, besides telegraphing and ticket-selling, consisted of handling baggage, and delivering to the express messengers on passenger trains money packages and various express parcels.

Things ran smoothly enough until December 18. When the St. Paul flyer arrived at Overland at nine o'clock that night James emerged from the telegraph office carrying two heavy mail sacks and a small express receipt book containing a sealed money envelope of five twenty-dollar gold pieces. When just outside the door he thoughtlessly laid these things on the platform and rushed back to the telegraph key to answer a call from the

dispatcher. Returning to the mail sacks a moment later, he found everything intact save the envelope containing the one hundred dollars. Search as he might, *that* could not be found.

Havens, on being apprised of the loss, promptly reported it to division headquarters, and begged that Norton be replaced at once by an older and more experienced man. No extra man being available, Havens himself was returned to the night shift, and McKenna, the regular agent, canceled his vacation and resumed duty on the following day.

This morning marked James Norton's fifth visit to the railroad station since his dismissal. He had hoped by now to receive encouraging news regarding the lost money, but was disappointed. The $100 could not be found.

Only by earning money during spare hours had James Norton found it possible to attend school. With this lost $100 to repay, his schooling must cease. Worse yet, his prospect for a future railroad career appeared to be ruined.

"To think," he exclaimed bitterly, when half way across the prairie, "of a little carelessness losing a fellow——"

He did not finish. The stooped figure of a crippled old soldier hobbled into view—a figure so feeble and so forlorn-looking that for the moment James entirely forgot his own trouble. A friend, Uncle Joe Storey, was approaching.

For two weeks Uncle Joe's wife had lain seriously ill, and the long nights of nursing and watching at her bedside had finally rendered the aged veteran unfit for duty at his lunch cart—a little business he conducted near the depot, and one that had, until this misfortune, furnished a modest living for the elderly couple. To make matters worse, the man placed in charge of the establishment had closed it up, then disappeared. The lease for the cart had almost expired, and if not soon renewed would be taken up by another, thus depriving Uncle Joe of his only means of earning a livelihood.

"Good morning, Uncle Joe," was the boy's kindly greeting. "How's Aunt Jane this morning?"

"Pretty bad, Jimmy boy, pretty bad! No Happy New Year for me, I guess, and I'm afraid I've lost my trade at the cart. Oh, it's a shame to let that place stand idle. If there was only some man on whom I could depend—someone who would show interest in the business. Can't depend on help, though."

There was a strange touch of pathos in the quivering recital which deeply moved the youthful listener. The old soldier, surmising the boy's own trouble, but deeming it not wise to comment on it, bade him good-by and started on.

James himself had gone but a few yards when he stopped. How about the time he had gone camping in the Green Mountains back East? How about those compliments paid his cooking by some boy comrades? Could he do it? He turned quickly about and rushed after the retreating figure of the old soldier.

"Unc-le J-o-e!" he shouted, the first hopeful note in his voice that morning, "oh, Uncle Joe!"

The old war veteran looked back, and observing the tall, dark-haired figure rushing toward him, stopped.

"Jimmy," he said, when the boy had reached him, "I knew you wanted to tell me about that lost money; saw it on your face all the time. Of course, you didn't mean to be careless. I——"

"But that's *not* what I was going to say," interrupted the boy, somewhat downcast. "I want to know—do you think *I* could run your lunch cart?"

So astonished was the old soldier that, without a word, he placed his hand in his right pocket, withdrew a small bunch of keys and handed them to the boy.

"Jimmy," he said, "there's no one in Overland I'd rather have. Can you do short-order cooking?"

"Well, if you'll give me a chance, Uncle Joe, I'll——"

"You'll try," prompted the old man tenderly. "Why, of course, you will. No one in Overland tries harder to make a man of himself than you do. I was afraid I was going to lose that little business. Now, maybe—well, go ahead and try, my boy. I'll rest easier knowing it's in honest hands. Get what provisions you need at Greene's grocery and meatshop. Charge them to me. I'll arrange that. Do your best, Jimmy. I'll go back to Jane now. Good-by."

The fact that no arrangements had been made with regard to the pay he should receive did not worry James. He was fairly overwhelmed with joy at having found work, and glad, too, of the opportunity of serving Uncle Joe Storey.

The hopeful boy lost no time in reaching the little lunch cart. It stood 300 feet west of the depot and seated ten customers. It had, in former days, served as a street car. As James unlocked and opened its door an unpleasant sight greeted his vision. Dirty cooking utensils and numerous empty bottles rested on the shelves and counter; the floor was littered with paper and crumbs—for all of which the last employee was responsible.

James removed his coat, heated two pails of water on the small gasoline stove, and, finding an abundance of soap and cleaning powder, washed up every dish and utensil in the cart. At noon he set to work cleaning the windows and scrubbing the seats, counter, shelving and flooring. By evening the little car looked quite respectable.

Mrs. Norton was not only surprised but greatly overjoyed at the change in her boy's manner when, on returning home at eight o'clock that night, he rushed into the kitchen and greeted her affectionately.

"Mother," he exclaimed enthusiastically, "you can't guess! I'm to run Uncle Joe Storey's lunch cart. Been working there all day. Now, mother, what shall I serve?"

"Well," responded Mrs. Norton, her eyes dimming with glad tears, "my hens are laying now, and you may have fresh eggs from here. *They* will cost you nothing."

"Mother," protested James promptly, "you shall have the regular market price. That egg money is part of your income."

Before midnight Mrs. Norton had prepared home-made bread, pies and doughnuts for the next day's trade.

Six o'clock the following morning found the little car open for business with a bill of fare posted as follows:

EGG SANDWICHES
FRIED EGGS
HAMBURG
DOUGHNUTS
APPLE PIE
MILK

The attendant in charge was hopeful, but when noon arrived not a single customer had entered the place. Former patrons who had been driven away by the last employee's unclean ways were not yet aware of the change in management. Up to closing time that night James had sold but one cup of coffee, a sandwich and a piece of pie. Before going home he

overheard some noisy talk between a pumpman and a brakeman.

"I can see that kid runnin' a lunch car," the pumpman had declared sarcastically. "Why, he needs a guardian to hold his money for him, eh Bill? Well, he won't last very long."

The boy suddenly grew hopeless. Evidently no one considered him responsible! Supposing he did *not* succeed!

Mrs. Norton saw the troubled look on her boy's face as he dejectedly entered the cottage that night; saw, too, the red, chapped hands that had toiled so faithfully in an endeavor to make the car a fit place for the most fastidious customer. Intuitively she felt it would be unwise to question James. His careworn expression told only too plainly the story of that first day's failure.

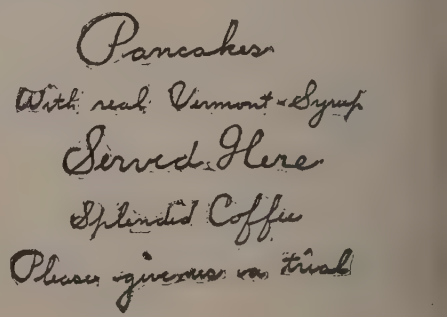
"Mother," he confided presently, in a voice broken with emotion, "I took in—but fifteen cents today."

"Have courage," she responded after a moment's silence. "Perhaps tomorrow has something better in store for you. It takes time and patience to re-establish a business reputation once it has been lost."

When James Norton started for the cart early the following morning he had decided on a change in his menu. The crisp, cold weather seemed to invite it. A year before this his widowed mother had disposed of her little farm in Vermont and, with James, had migrated to Overland, a thriving town in the fruit-growing belt of Idaho, where she purchased a house and five acres of ground. There still remained some of the maple syrup brought from their old home, and this morning James carried two gallons of it to the cart.

On arriving there he began the still novel work of "opening up the cart." That meant scrubbing and scouring of counter, stove, coffee urn, and floor—and the boy did it thoroughly.

When everything was spick and span James immediately prepared a strange mixture, consisting of flour, cornmeal, eggs, salt, baking powder and sweet milk, then added to it a handful of a certain flaky cereal. He next took up a small blackboard and a bit of chalk. Having learned from Agent McKenna how to execute that style of handwriting known to telegraphers as "operator's fist," he presently placed on the outside of the cart the following notice:



In spite of this earnest invitation, the forepart of the day yielded no encouraging results. The receipts at 3 P. M. amounted to only fifty cents. At that hour the white-aproned boy gazed hopelessly out of the little window, first at happy holiday crowds passing by, then at the new depot being erected across the tracks. But for his recent carelessness he might have at some future day been a regular employee at that depot. When he thought of the splendid telegraphic equipment he would have enjoyed in the new building, the crude practice telegraph set he had installed in the lunch car lost all its charm. Perhaps, after all, he would never have another opportunity to work at railroad telegraphy!

It was in the midst of this depressing

period that a jolly-looking traveling man approached the new lunch sign, gazed curiously at it for a moment, started on, then for some unknown reason retraced his steps and entered the car.

"Well," he exclaimed cheerfully, "are you the boss now?"

James smiled in the affirmative, but the smile quickly vanished when the customer called for "a Spanish omelet."

"I don't believe I ever—heard of that," stammered the boy. "I'm not a regular cook. I can fry, poach or boil you some eggs. I'll know how to make that *omelet* the next time."

"Well," he responded kindly, "let's try some of those wonderful cakes that you have advertised in that very plain handwriting. In fact it was the *handwriting* that attracted my attention. Looks like an operator's fist. I'm an old telegrapher myself."

In a moment James placed before the traveler a plate containing four deliciously browned pancakes—fluffy pancakes with crisp, crackling edges. These the stranger flooded with golden syrup, all the while questioning the boy regarding his knowledge of telegraphy, finally learning of his unfortunate experience at the depot, and of how he had happened to take charge of the cart.

"Well, James—Pancake Jim, I've half a mind to say, for these are the best pancakes I've eaten since I left Boston—keep this up, and you'll make a reputation. You're bound to make good. Take that from an old traveler. Hope I'll see you again."

As the kind-hearted stranger departed there was a feeling in the boy's throat which he found difficult to swallow, for these were the first kind words he had received from a customer since he had taken charge of the cart.

A moment later a coal-begrimed fireman entered the car.

"Whatcher got to chew, Buddy?" he asked. "Wouldn't have come in, but a traveling man told me to try. Let's have some of your pancakes. Hustle; we leave in twenty minutes."

It seemed that this good fortune was to continue, for now came an engineer and two brakemen, and during the next ten minutes pancakes, maple syrup and coffee were fairly flying across the little counter.

"Fellows," declared Engineer Jones as he started with his three companions toward the train, "that lad's no slouch on pancakes and good coffee. Real cream in the coffee, too. What do you know about that? That's a new one for a railroad eating place."

That afternoon proved to be the turning point in affairs at the cart. The success that quickly followed so surpassed his expectations that, when Saturday arrived, James had written John Tyler, superintendent of the Columbia division, telling of his new-found employment and of the probability of his soon being able to make good at least part of the missing hundred dollars. The veteran official was favorably impressed with the boy's frank expressions, placed the letter in a special file, and made several entries in a small notebook.

The pancakes and coffee served by James Norton were winning praise from all who partook of them. Traveling men and even certain employees at the Overland lumber yard forsook a large restaurant uptown and patronized the cart. Conductor Lahey said there was nothing like it on the Columbia division.

"Why," he remarked one day, "that lad is actually drawing trade from the hotel. Do you wonder? Who wouldn't enjoy those delicious pancakes and that golden

coffee he dishes out? Jim Norton has won my trade."

All of the boy's patrons now spoke of him as "Jim."

One wag of a brakeman went even further, for when the boy arrived at the cart on the morning of the day before Christmas he was surprised to see fastened to it a well-made and beautifully lettered sign on which were these words:

PANCAKE JIM
THE BEST EATING HOUSE ON THE ROAD

Thereafter his name was "Pancake" Jim.

The boy labored hard at the little cart from early morning until late at night. He kept the place very clean, served only the best of food, was prompt and willing, and so cheerful that patrons suggested changing the name to "Sunny Jim."

A few days preceding New Year's a railroad official's private car was switched into a sidetrack in the Overland yards. That same night James was a trifle surprised to see a distinguished-looking gentleman step into the lunch cart and seat himself at its small counter.

"My boy," said the stranger, "I wish to try some of those pancakes that have become so famous on this division."

James promptly served the customer, and cheerfully answered his minute inquiries concerning the little eating establishment. When the caller started away he grasped the boy's hand.

"By making better pancakes than your competitors," he declared earnestly, "you have built up a good trade here. I'm glad to know a boy who does a thing just a little better than the other fellow—I don't care if it's only blacking boots. Good-night."

"A plucky young chap," reflected the tall stranger as he walked toward his private car. "He isn't going to let one mistake floor him."

James little suspected that he had served John Tyler, superintendent of the Columbia division, and that very soon he was to have further dealings with this railroad official.

On the last night of the year James called at the Overland railroad station. Agent McKenna welcomed him cordially, and even Peggy, a black water spaniel who made her home there, wagged her tail joyfully when the boy patted her head. The little dog had not forgotten how James, during his brief employment at the depot, had always given her a part of his midnight lunch.

"Well, Jim," declared the agent after a brief chat with his young visitor, "I've ransacked every nook in this old shack for that hundred dollars—no trace of it anywhere. We move into the new station tomorrow. I'll keep my eyes open. Drop in again."

"But for that lost money," thought the boy as he trudged homeward, "I could have finished high school this year."

The next day marked the opening of Overland's new railroad station—a structure which stood directly opposite the old depot and comprised a finely equipped telegraph and ticket office, waiting-room, baggage-shed and living quarters for the agent.

Late that afternoon workmen began tearing down the two-room building that for ten years had served Overland as a depot. As fast as the lumber was separated it was loaded onto a flat car. As the last boards were being ripped up from the telegraph office floor Agent McKenna, who stood nearby, suddenly caught sight of Peggy, the water spaniel, lying under one end of the flooring. Curious to ex-

amine her strange quarters, he pried up a board, knelt close to the ground, and there in a snug little bed discovered three squirming black puppies. Near one of them a familiar inscription and seal attracted the agent's keen eye, and, lifting up the wee animal, he found the larger part of the envelope, together with the five twenty-dollar gold pieces which had been spirited away from James Norton on the night of December 18. Peggy had innocently carried away the money.

"Peggy, Peggy," scolded the old railroader, "you don't know the sorrow you've caused."

So repentant did the little dog appear that the agent smiled his forgiveness, patted her head, then rushed to the telegraph key and entered into a wire conversation with the division superintendent.

At this same hour James Norton was being welcomed at the cottage of Uncle Joe Storey—his first visit there since he had taken charge of the lunch cart.

"Yes, Jimmy," declared Uncle Joe after an exchange of New Year's greetings, "Jane's health is so greatly improved that I hope to resume duty at the cart. Tell us how you've made out, my boy."

For reply James handed the veteran a roll of crisp ten-dollar bills.

"Sixty dollars! Why, Jimmy! Surely that isn't all clear?"

"Everything has been paid for," answered the boy proudly, "except my services. I hardly know what they're worth."

"Worth! Why, my boy, it's you that *saved* my little business. I've been hearing good reports about you every day. You didn't know it, but the other night I took my duplicate key and walked into the car. Clean! Why, the sight was good to my old eyes. Jimmy, here's thirty dollars. That's not all. You shall continue to help me by running the car after school hours, keeping all you make during those periods. The sign—PANCAKE JIM—shall remain. That name stands for well-earned success."

"Then I *can* finish high school after all, Uncle Joe. Oh, I must run and tell mother!"

Scarcely had the boy stepped out of the door when he was met by Agent McKenna. Both reëntered Uncle Joe Storey's cottage, and there, for the first time, James heard the story of how the agent had found the lost money with Peggy's family under the depot, how he had reported it to the superintendent, then sought James at the lunch cart, and, finding it closed, had traced him here.

"Hereafter," advised the old railroader, "keep a tight hold on money packages. Don't lay them on platforms for dogs to carry off. Now, listen to this message:

"'TO PANCAKE JIM.

"'Happy New Year! While I dislike checking the career of a competent lunch cart manager, yet if you still think of following railroad work we'll give you another trial on the Columbia division next summer.

"'JOHN TYLER, Superintendent,
"'Columbia Division, North Pacific Railroad.'"

A MESSAGE TO ALL THE BOYS OF AMERICA

BY

THEODORE ROOSEVELT

FORMER PRESIDENT OF THE UNITED STATES
HONORARY VICE-PRESIDENT OF THE BOY SCOUTS OF AMERICA

Col. Roosevelt, because of his great interest in American Boys, wrote this message while on his way to South America, and sent it to Mr. James E. West, Chief Scout Executive of the Boy Scouts of America, as his contribution to the Christmas number of Boys' Life, the Boy Scouts' Magazine.

On Board the "Van Dyck,"

I wish to send this message, not only to the Boy Scouts, but to all the boys of America. The prime lesson that the Boy Scout movement is teaching is the lesson that manliness in its most vigorous form can be and ought to be accompanied by unselfish consideration for the rights and interests of others.

Indeed I can go a little further. I wish that I could make the especial appeal to the American boy to remember that unless he thinks of others he cannot fit himself to do the best work in any great emergency.

The names in our history to which we now look back with pride are the names of men who have rendered great service. This service may have been rendered at the same time that they themselves gained glory or reputation. But neither the glory nor the reputation would have been gained save as an incident to the service.

In our history there is now practically no mention of any great financier, of any great business man, who merely made money for himself. If at some crisis in the nation's history that financier rendered a great national service, or if he identified himself in useful fashion with some great movement for good, whether in art or philanthropy or otherwise, then his name remains. But even under these conditions it remains as of secondary value. America's contribution to world history has been made by the statesmen and soldiers whose devotion to the country equaled their efficiency, by men of science, men of art, men of letters, by sane and honest reformers, who did great work and treated that work as in itself a great reward.

The two greatest men in our history are Washington and Lincoln. They possessed great ability, great intellect, and especially great sanity of mind; but it was the fact that they each possessed the highest character, a character both very strong and very unselfish, which gave them their pre-eminence over their fellows.

There have been very able and very unscrupulous statesmen in our history. But not one of them has ever come within even measurable distance of the achievements of Washington and Lincoln, or of the reputation of Washington and Lincoln; and this precisely because they were unscrupulous, because they lacked character.

Let me illustrate what I mean by an example from my own experience: When fifteen years ago I was helping to raise the regiment of Rough Riders, I did my best to get both as officers and enlisted men those men, and those men only, who I believed would make formidable fighters in a battle, rugged men in a campaign, and men of indomitable purpose to see the war through. I would not take any man who was not strong, hardy, brave, able to live in the open, able to handle both horse and rifle.

But even if the man had all these qualities, if he were quarrelsome or egotistical, or bent only on his own selfish advancement, and if I knew that this was the case, I would not take him. If he cared only for himself I was sure that he would be apt to be a bad instead of a good element in the regiment. There were some men from the plains whom I refused, although I knew that they were formidable fighting men, because I also knew that they were quarrelsome bullies and would wish to exalt themselves at the expense of their comrades; and I did not wish any man with me unless he was prepared to put the honor of the regiment and the army and the flag first of all. If a man of the wrong type got into the regiment and I found that, though brave, he was thinking only of his own advancement and shirked doing work that might help others, or intrigued against them, or failed to support them, I got rid of him or discriminated against him or else took the first chance to punish him as roughly as I could. The best work could be done only by the man who, in addition to possessing formidable fighting qualities, had the desire to help others and the willingness to sink his own advantage in the common advantage.

What was true on a very small scale in my regiment is true on a very big scale of American citizenship as a whole. The boy is not worth anything if he is not efficient. I have no use for mollycoddles, I have no use for timid boys, for the "sissy" type of boy. I want to see a boy able to hold his own and ashamed to flinch. But as one element of this ability to hold his own, I wish to see him contemptuously indifferent to the mean or brutal boy who calls him "sissy" or a mollycoddle because he is clean and decent and considerate to others. If a boy is not fearless and energetic, he is a poor creature; but he is an even poorer creature if he is a bully of smaller boys or girls, if he is guilty of cruel mischief, and if in his own home, and especially in his relations with his own mother and sisters, he is selfish and unfeeling.

I believe in play with all my heart; but I believe in work even more. While boy or man plays, I want to see him play hard; and when he works I don't want to see him play at all.

Theodore Roosevelt

TROPIC SMUGGLERS

The Effort of a Revenue Officer and a Boy to Enforce the Law in Florida Waters

BY WALTER WALDEN

I

THE Revenue Officer, Joseph DeLong, took one last sharp look to the shore, among the palms and moss-hung oaks, and said:

"Now then, when you are ready!"

For answer I seized the anchor cable, and we had the anchor up in a jiffy. The sloop swung round in the current, the sails filled, and we started down the river on this strange voyage. I held the tiller, for I was sailing master of the *Rambler*.

Mr. DeLong continued to watch the banks and I wondered whom or what he expected to see. I was the more mystified as I recalled the pair of large-caliber revolvers he had stowed away in the cabin with the rifles.

This Revenue Officer had come into my life only the day before, when the postmaster in Fort Ogden pointed me out to him as the owner of a sloop suitable for a voyage down the bay.

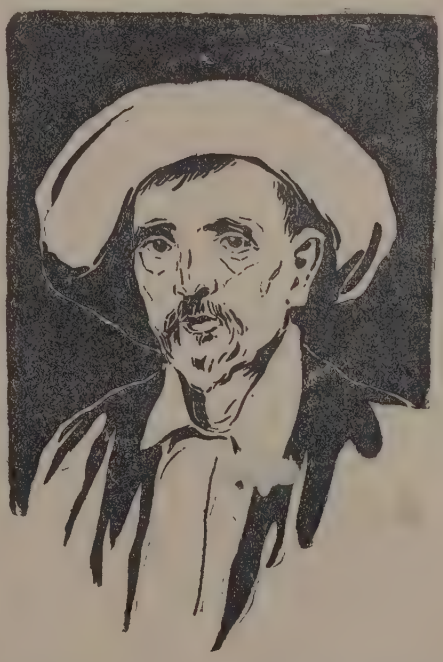
"He's only fifteen, but he's a good sailor," I heard the postmaster saying to him.

My father was reluctant, for Joseph DeLong admitted there might be some danger in the expedition. But it was all arranged. I was wild with excitement, for I had lived in these Florida wilds only a few months, and was yearning for adventure and exploration in the tropic waters and forests.

I couldn't help wondering what we were up to, but I put down my curiosity.

We passed many little islands of the gnarled rooted mangrove, and in an hour

were in the broader waters of the head of Charlotte Harbor. At dusk we had rounded the point, and, after throwing out the anchor, we went ashore in the rowboat to a small island. Soon we had clams roasting on our camp fire, and when Joseph DeLong got stretched out in a comfortable position he looked across to me with a friendly twinkle in his eyes.



I knew it was coming now—what I wanted to learn.

"All I've got to tell you now, Nat, boy," he said, "I'll ask you to keep to yourself—in case we should be separated before doing what we've set out to do."

And then he gave it out to me that he was a Government agent—that he had received the word—in cipher—from Cuba that the schooner *San Marco,* thirty tons, with four men and contraband goods on board, had made sail for Charlotte Harbor.

"Is it cigars they're smuggling?" I ventured to ask.

"We mustn't let a *single cigar* get by us!" he answered, smiling mysteriously.

Before noon the next day we lay to within the long line of narrow sand islands, or keys, that separate the bay from the Gulf of Mexico. We got out a chart of the region, and Mr. DeLong began to study the various passes between the Gulf and the bay, especially with reference to the depth of the water. He pointed out a pass to the south as the likely one for the smugglers.

Soon we were moving south again. The first island was well wooded on the inner side, and a palm-covered point reached out in a curve to make a beautiful cove.

"What a fine berth for the sloop!" exclaimed Mr. DeLong. "A good hiding place may prove worth while."

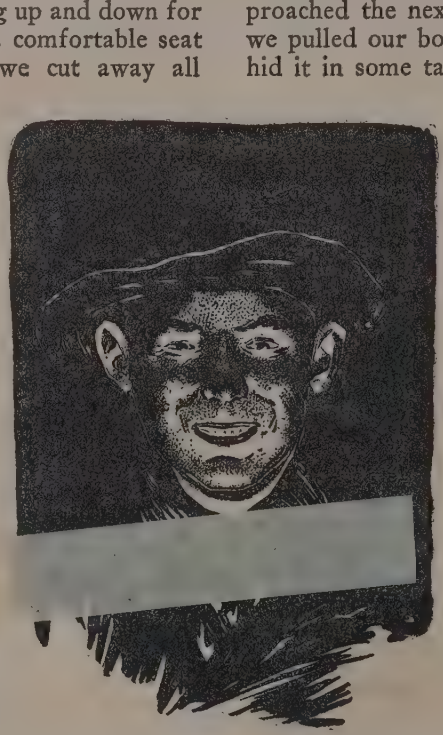
We went ashore, leaving the *Rambler* at anchor, screened by the tall palms. While I gathered fuel for a camp fire the man took his binoculars and hurried across the island for a hasty survey of the Gulf. There were a number of live oaks on the island, so I found some good hard wood to put on top of the dry, dead leaves of the palm that lay strewn about.

As I worked I wondered why Mr. DeLong had not taken a strong party of men along with us to catch the smugglers—the whole thing did not seem so simple and easy, now that we had come closer to the crisis. So when he returned I asked him.

"Nat," he said, smiling at my question, "these smugglers are old hands and usually have a good 'nose' stationed ashore. A strong company attracts attention, excites suspicion, and one never gets a sight of the smugglers. If they have a shore watch I'm lucky to have missed him so far. That's why I wish to

conceal the sloop; there is no telling where he may be sniffing about."

After our meal I went with him to the Gulf side again, to find a good vantage point from which to watch for the *San Marco*. After searching up and down for some time we selected a comfortable seat high in an oak, and we cut away all branches that obstructed the view of the sea.



At dusk I went upon the point of land that formed the cove, to throw out a line for fish.

I was just about to swing the line when my eye caught the dim outlines of a rowboat with a mast at its bow. I dropped the line and hurried with my news back to Mr. DeLong by the camp fire.

We threw sand [illegible] to the point and among the palms.

The boat was now directly opposite, and its single occupant appeared to be scanning the shores up and down searchingly as he rowed.

The Revenue Officer silently gazed till the man and boat had passed.

"That's the smuggler's shore watch sniffing for us," he said. "Now we'll have to watch him."

He put a dark lantern in the small boat, wound socks around the oarlocks to muffle them, and we embarked.

It grew dark rapidly. We rowed steadily, but were careful to keep out of view of the solitary boatman ahead.

We continued cautiously for some time, and, neither seeing nor hearing anything of him, we increased our speed, soon passing the nearest island. Then we caught the glimmer of a light as we approached the next. Arrived at that key, we pulled our boat out of the water and hid it in some tall grass. We went forward on foot, following the edge of the water. There was no moon and, though the stars were out, it was quite dark.

Presently we made out a black object ahead on the sands and stopped to listen. Not a sound! Then we proceeded swiftly. When we arrived at the boat with the mast, the Officer took out his lantern and examined the inside. Finding a coat, he handed the lantern to me and in the narrow light of it went through the pockets. I held my breath, but kept my eyes and ears alert.

Soon he startled me by whispering sharply.

"There! look at that, Nat."

I looked on a paper held in the shaft of light from the lantern and saw two drawings in pencil.

The first was a perpendicular sketch line with a circle near its top; underneath were the words "ALL IS WELL."

The other was a cross, with the word "DANGER" written below.

The Revenue Officer returned the paper to the pocket and put back the coat; he

closed his lantern and we quickly retreated the way we had come.

As we trudged on I remember I experienced an odd sense of discomfort. I didn't know the cause, except that it had to do with finding that coat in the skiff. It was an ordinary black coat—no blood stains—nothing eerie about it; but I was uneasy. It was all too ill-defined to speak of, so I finally laid the feeling to the excitement of the moment, and put it out of my mind.

It seemed a long time that we sat waiting in concealment in the long grass, beside our boat. Then finally there appeared a dim object, coming slowly along the shore. We could scarcely hear the oars as this smugglers' shore guard made his way back. Mr. DeLong tried to make him out with his glasses, but it was just a dark mass that passed in the murk.

"Well, that's the fellow, anyway," he said in a low tone. "He has done his work. We'll not be troubled with him again. He doesn't know where we are, but he guesses we're somewhere among the islands, and he's balked us, he thinks. So now he'll clear out and keep out of the way. His game is to play respectable."

The Officer seemed to know just what these people would do. And now I turned my mind to wondering what had been the boatman's "work" on this island. That he came to give some sort of warning to the *San Marco* I easily deduced—from the paper that we had found in his coat.

"Well, Nat," said Mr. DeLong, "we may as well sleep here, and undo this chap's work in the morning."

We found a suitable place, and Joseph DeLong was soon asleep. Excitement kept my eyes wide, tired as I was. I lay on my back and looked on the graceful, still top of a tall palm, thrust into the sky and surrounded by stars. It seemed as

"Presently we made out a black object ahead on the sands."

if the palm gravely watched us, wondering over our behavior.

I awoke, my head shaken by fingers grasping my hair. It was still dark.

"Up! Nat, boy! Our day's work will begin before daylight." I was glad to find it was Joseph DeLong.

Down the beach where the strange boat had landed, we picked up the trail in the light of the lantern, and followed it up through the growth of palm and hardwood to the Gulf side, where it ended at the foot of a large oak. The Officer called me out on the beach and pointed to the top of the tree.

In spite of the dark, I could see protruding from the uppermost branches, outlined against the stars—a cross.

"You remember the paper?" he asked.

"Yes," I returned. "That means 'Danger!' "

"Now we've got to change that," he said.

We had little difficulty in climbing the tree, and found a tall pine sapling tied to the highest upright limb. We loosed and let down the sapling sufficiently to remove the cross-piece at the top. Then we made a fairly decent hoop of palm-leaf stalks, which we fastened to the top of the sapling in place of the cross. Then we lashed the sapling in place again.

It was fairly light when we returned to the beach to view the result of our work.

"Now, that means what?" said the Revenue Officer.

"Why, 'All is well.' " I answered.

"Of course," he said, reassured.

We rowed back to the sloop and to breakfast, conscious that we now had only to watch and wait. After the meal Mr. DeLong sat with his back to a palm. The twinkle was in his eye again.

"There's nothing like beating them with their own weapons," he said. "They'll crawl right into our trap now when they come."

"What would they do if we'd left the signal the way that man made it?" I asked.

"Why, they'd skip away and go to the next best 'run in' agreed on," he said. "Any signal at all means that he has spotted some of us Government pests and knows what we're up to. No signal means that he hasn't spotted us or is in doubt; then they would lay off and wait till the signal showed them whether we're on the job and there is danger, or if the coast is clear."

"And now they'll think the coast is clear, when they see the signal we put up in the place of the cross," I said, in elation over the surprise we had in store for them.

But I had some misgivings as I thought of a man and a boy tackling four men, fierce as pirates—which they were, in fact—and I expressed my doubts.

He smiled at me and replied:

"I'll tell you, Nat; before we left Fort Ogden I mailed a letter to Tampa, directing three of our men to skip down the coast as fishermen, and go into concealment on Boca Grande Island to wait for us to pick them up. They should be there tonight, or in the morning at the latest."

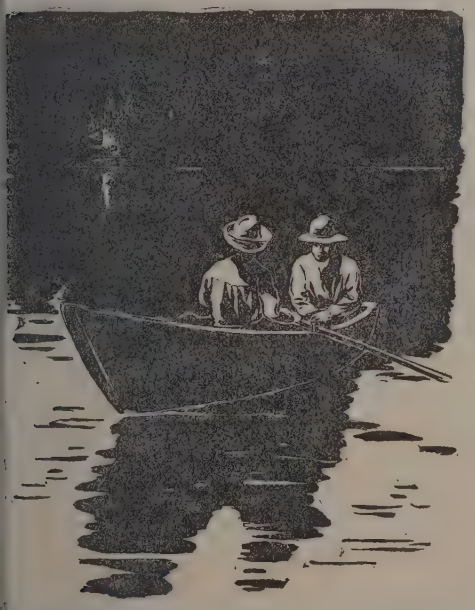
Boca Grande Island lay about five miles to the north of our cove, and just the other side of Boca Grande Pass, the main entrance to the bay. I felt much reassured by this news; so now there was nothing to spoil my anticipations. Surely four good men and a boy should be sufficient for the four smugglers.

Mr. DeLong decided that it would be as well to begin our watch for the schooner *San Marco*. He said we should make hourly patrols to the Gulf side of our island during daylight. Inasmuch as the *San Marco* would not run in till it could see the signal, it was useless to watch when it was dark.

So we made trips to the outside of the

sland each hour, sometimes together, ometimes singly. Now and then we climbed to the perch in the tree. We continued so for two days; but not a sail was seen all that time.

After noon of the second day a powerful gale came tearing in from the west. It



We rowed back in the sloop. . . conscious now that we had only to watch and wait."

ontinued with great force till sundown, when there was some abatement; but it blew hard all night and the surf tumbled nd roared mightily on the outer beach.

It was still blowing with much force when I awoke at the beginning of light. oseph DeLong was gone to make the irst watch of the day. I set about preparations for breakfast, and after some time egan to expect his return. He tarried onger than usual for a watch before breakfast. Putting two fingers in my mouth, I blew my usual call "to mess." But he didn't come. Finally I decided to go after him and observe what the sea was doing, that it boomed so awfully outside.

I found him in the tree, and he called me up—said he had been expecting me.

He handed me the glasses without saying what I was to see with them. I scanned the sea.

"I see a sail," I cried. "It was just peeping above the horizon in the southwest."

"Good!" he answered. "Now we'll have breakfast." So we climbed down.

"Ten to one it's them," he said in answer to my query.

Excitement spoiled my meal; but the Revenue Officer relished the mullet and squirrel, and he made much of the oysters we'd found in the cove.

"Eat! Nat, boy," he said; "there's no telling what rations we'll get when our work begins."

But it was no use; my appetite had flown at sight of the sail.

We were soon back to the beach and up in the oak again. The hull of the vessel had begun to show, rising and falling on the roughly shaken sea.

After a time we were able to make out the schooner rig. He took a good, long look and handed the glasses to me. They were very strong, and I looked through them at the oncoming ship till my eyes smarted.

"Can you make out the fore-topsail?" he asked.

"Yes," I said.

Then he used the glasses again—looked long and hard. Finally he took them down with an ejaculation of impatience, and handed them to me again. Between the tossing of the ship and the swaying of our tree in the strong wind, it was hard to keep the glasses trained on the boat.

"Is the fore-topsail patched?" he asked.

"It doesn't look so," I answered.

Then, after a pause——

"Does it look white?" he demanded—I thought a trifle excitedly.

"I was just going to say that; it looks new," I said.

Then he took the glasses again.

"That's just it. They've taken off the patched one and put on a new one," he said. "Well, it's time to get busy," he added.

So we descended and hurried over to the cove. The tide had been flowing since before daybreak and was now high enough to float the sloop out into the bay. We put everything aboard, took the rowboat in tow, and in twenty minutes were sailing briskly toward Boca Grande Island, five miles north.

In less than an hour we crossed the rough sea that rolled in through the Pass, and came to anchor within the island. We lost no time in rowing ashore in the small boat to pick up the three smuggler-catcher friends of Joseph DeLong.

We penetrated the forest, and soon my comrade drew from his pocket a whistle, which he blew, making a peculiar, musical, bird-like tone. Then he listened. We heard nothing but the surf booming outside. We walked some distance farther, and again he blew his whistle; then listened for some minutes more. We traveled again—half a mile. Again a blast from the shrill whistle. There was no reply.

"Queer," said Joseph DeLong; "they must be asleep."

We continued onward, keeping near the inner shore of the island. Several repetitions of the whistle still brought no reply.

The Revenue Officer was becoming angry. He turned to me.

"Go to the outside," he said; "keep under cover of the trees, and watch the schooner coming in."

He started off on a run toward the north, leaving me alone.

I could hear his whistle at intervals as I made my way westward, across toward the outside of the island; its tone was growing harsh under his angered blowing.

When I came to the Gulf side I found the smugglers' schooner very much closer, coming in under a fair and strong wind. I leaned against a palm and watched her gallop toward land.

It was a long, long time, or so it seemed, until I heard a step behind me, and turned to see Joseph DeLong. There was something beside anger in his face now—it was consternation.

"They're not here!" he said, and his voice was hoarse.

He took one look at the vessel coming in, and then turned to me again.

"They didn't get my letter!" he declared; "nothing else explains it."

He seemed to appeal to me, and my heart was in my shoes in sympathy.

"Is that Fort Ogden postmaster honest?" he asked, and his wild eyes showed the perturbation in his mind.

Then all at once something flashed in my memory.

"It's Tom Wasson!" I cried.

"Who's Tom Wasson?" he demanded.

"The postmaster's clerk—that was his coat in the boat!"

Then I told him how the sight of the coat had affected me that night we found the paper in the pocket. It was my instinctive recognition of it—I'd seen it so often on his back in town.

"Ah, yes, that's it!" he broke in, and he struck his head in conviction. "He's their shore watch. Queer I didn't spot him at the store—but he must have kept out of my way. He filched out my letter!"

For several silent minutes he gazed at the oncoming schooner, bearing the smugglers it was his duty to catch. I looked first at the schooner and then at him, and then at the schooner again. She was heading straight inshore.

II

Suddenly he fronted me.

"Nat," he said, "there's much at stake—shall we give up?"

He seemed to hang on my answer, as if the decision depended on me. I could feel something surge in my breast.

"No!" I answered.

His face brightened.

"Do you feel nervy—can you keep your wits about you?"

I straightened my shoulders in a sense of exhilaration.

"Yes," I said.

"Good!" he fairly shouted, "that settles it!" And then he gave me a sound whack on the shoulder. "Now, then, we've got——"

His eyes were on the schooner when he stopped in the midst of his speech.

"Nat!" he broke out, "she's changed her course!—she's making for Boca Grande Pass!—she'll be here in no time. Come! we've got to do something!"

He led the way across to our sloop; he was full of action, his face glowed cheerfully and I caught the infection. When we got aboard the *Rambler* he plunged into the cabin, talking rapidly.

"We've got to work a bluff on these blackguards; it won't do to let them know our weakness. Out with every rag!"

Directly we had pulled into the cock-pit every bit of clothing and blankets. Then we set to work, and soon had rigged up a pair of scare-crows—"dummies" Joseph DeLong called them—with our hats with brims turned down to screen their supposed faces. They reclined in the cock-pit as if furtively looking over the edge, the muzzle of a rifle stuck above the combing beside each. A reckless pair they looked, those two. Bare-headed though we were, we imitated them, and waited.

Our sloop lay less than a quarter of a mile from the middle of the Pass; near enough for our dummies to be discernible to any vessels coming in.

We waited and watched for a period that may have seemed long or short, for all I can remember. Then, in the Pass there came into view from behind the palms, a bowsprit—jib—foresail—mainsail; and *San Marco* was on her bow.

Near the foremast stood a man with a pair of ship's glasses, which he soon had trained on us; and then quickly he passed them to another, who came up at his call. Two others were at the tiller.

Then there was hustle aboard. As two hurriedly trimmed the sails to gain utmost speed, the third brought out rifles, laid them on the house, and turned the glasses on us again.

In three minutes our sails ran up and we swung into pursuit.

"Now I'll bet they're berating that fellow Tom Wasson a-plenty for a bungler in letting them come into the bay," said Joseph DeLong. "They'll never guess we changed his signal."

It was noon, and Joseph DeLong brought out crackers and canned beef. In spite of my excitement I now ate with relish.

"A good sign, Nat," said my comrade. "I see you're steady when the game's in sight. Nothing like the chap who has his nerve in hand at the time he's most in need of it."

The schooner continued steadily on her

course up the bay. The sloop plunged in pursuit, lying well over under the beam wind. But the larger vessel was the stronger sailer, and was leaving us more and more behind.

We had hardly finished our snack when the *San Marco* rounded the point and sailed out of sight, the wind now dead behind her. The sloop soon rounded the point as well and sighted the schooner, but before long she was among the islands at the top of the bay and out of our vision.

We sailed into the mouth of Shell Creek and very soon came upon the *San Marco* —abandoned, and her boat gone. Half a mile farther up the creek we threw arms and grub into our rowboat and left the *Rambler*.

We rowed on, encountering obstructions in the shape of fallen logs and branches, soon to come upon the smugglers' boat, tied to the bank.

"Now, Nat," said Joseph DeLong, as we scrambled up the bank, "we must hustle. You keep your eyes out ahead, while I keep mine on the trail."

We must have followed the trail four miles through the pine forest, sometimes on the run, when we made out a swamp ahead.

"They're likely to have made a stop there," said my comrade. So we became wary, stooping as we went.

The crack of a rifle startled us.

"Down!" said DeLong.

I dropped flat, as did he.

When we peeped forth we could make out the four smugglers, hurrying toward the swamp, and carrying two bulky bags between them. We hastened after, till they had reached the edge of the swamp and were lost to sight again.

Mr. DeLong said that now we must watch the keenest, for a critical time had come. We took up a position behind a large pine tree and rigged up a screen of saw-palmetto leaves, behind which we could stand erect without being exposed. Our arms were placed handy, and Joseph DeLong put his glasses to use again.

"Now I'll tell you, Nat," he began, as he kept his glasses pointed through the screen, "in their bags they've got a couple of bundles made up of boxes of cigars. Most of them are taken along for a blind. It's not to run through a few boxes of cigars, Nat, that they're taking all this trouble and risk. And they know we're up to that—they're not old hands at the game for nothing. There are just about two boxes among the lot that they're determined to get through with. I want to get those certain two boxes—and the four smugglers with them."

"I wish I could see what they're up to, Nat," he continued. "They're hard at something on the ground."

I was no less impatient, seeing nothing but a head now and then, as it bobbed up above the palmetto brush.

Suddenly he seized me with one hand, the other still holding the glasses to his eyes.

"There go two of them with a bundle between them!" he cried. "It may be a ruse—they may be trying to draw us off—but they may have the boxes we're after."

Immediately he dove into his pockets and began making a pile of eatables; and he talked rapidly again.

"Now, quick! I'm going after those two. I'll leave you most of the grub—you'll have your rifle. Better keep the grub and the revolver in your pockets. Do your best to keep the other two in sight. Don't let them see you if you can help it, and *keep out of range*. Now listen!"

He stood ready to start away as he gave me his parting directions with emphasis.

"If they're really off—and I'm not back in an hour or two—I'll be back before two nights are gone—*without fail!* If I have any trouble locating you when I do come, I'll blow my whistle. You'll not mistake it—you'll never hear another like it. Now remember this: I'll search the whole country over until I find you; don't forget that. If these fellows left behind have with them the goods we're after, they'll stop somewhere about here till the others come back—or for a couple of days anyway. But we mustn't let any of them get away now if we can help it. If I'm not here by the second morning, you'll know I'm done up. Then you trot for home."

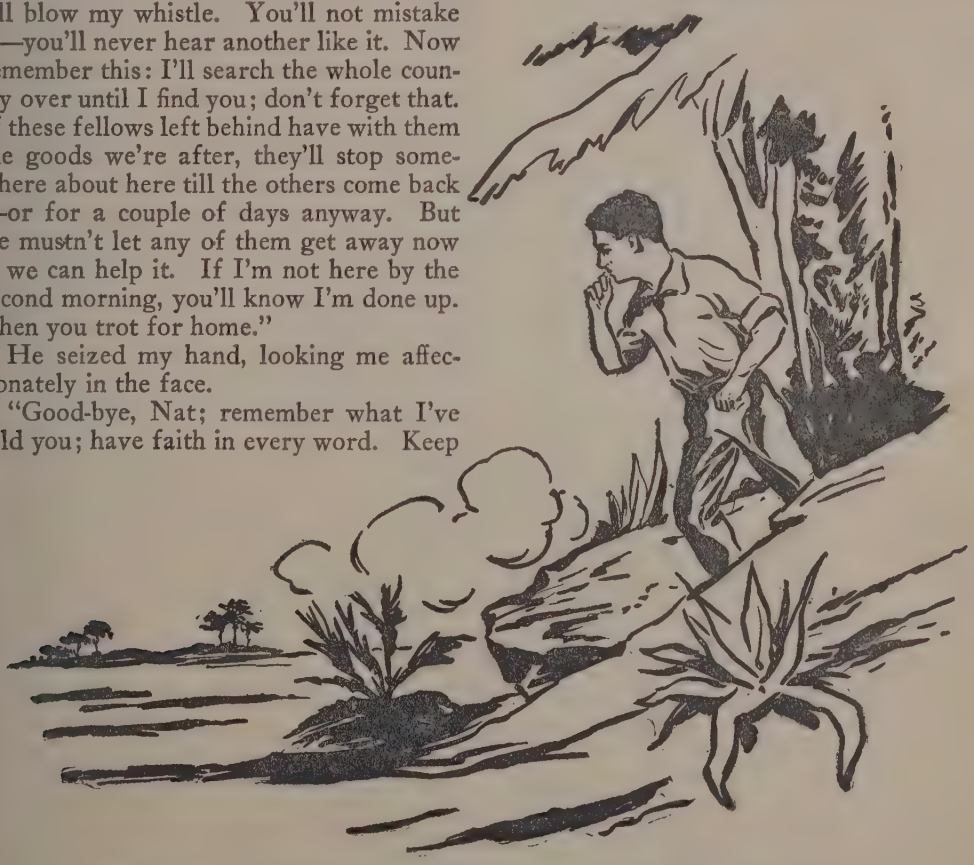
He seized my hand, looking me affectionately in the face.

"Good-bye, Nat; remember what I've told you; have faith in every word. Keep up your courage, *but don't expose yourself.*"

"Good-bye," I said; "I'll do as you say."

Then he went, almost crawling for a hundred yards, not to show whence he came. I peeped through the screen and could see the two remaining smugglers, who caught sight of him when at last he rose to his feet in pursuit of those who had gone.

I put the heavy revolver in my coat pocket, and I also pocketed what I could of the crackers and cheese.



"'Putting my two fingers in my mouth, I blew my usual call "to mess".'"

It was not the most comfortable position—leaning against the pine behind that palmetto screen, and I wished for night so that I might be more free to move about without being seen, and when they should have a camp-fire to illumine the objects of

my watch. I could see one at a time of the smugglers—sometimes both—and it was apparent that they were aware that there still remained one to watch them, for they looked about keenly to discover my post.

Then it happened! My foot must have disturbed the rifle, where it stood leaning against the tree, so that it slipped on the bark and fell against the screen, knocking it down.

For a startled moment I stood exposed. Then I dodged down behind the tree and peeped fearfully forward to make sure I had not been observed. But there the two were, already making toward me, rifles in hand.

I turned and ran for my life. I was quite fleet of foot, and then I was a bit used to the palmetto roots; so I felt my advantage. But directly came the crack of a rifle, and I had the fearful sense that a ball had been sent tearing after me.

I had run a mile when I splashed into a pond. Then I stooped and turned sharply to one side, keeping in the water for fifty yards, and plunged into a clump of palmetto—in hiding.

My pursuers soon dashed by the direction I had been going, and I hastily crawled out and doubled back, as rabbits do, going hot-foot till I reached their camp, close beside the swamp, and under guard of three tall cabbage palms.

As I thought of the smugglers' probable movements an idea took form; I acted on it at once.

I selected a palm nearly fifty feet in height, removed my shoes—hanging them about my neck—and immediately proceeded to climb to its leafy top. I squeezed into the middle of the stems, bent the center shoots into as snug a nest as possible, and then arranged a loop-hole through which I could view the camp of the smugglers below.

I must have been there three-quarters of an hour before the two smugglers returned. They were thoroughly blown from their chase, and threw themselves on the ground, so close under my perch in the palm that I could have tossed a bit of cheese between them; and all their talk was perfectly audible to me.

"Well, I'll bet that kid don't come back here again—I reckon he's running yet."

"Don't be too sure of that."

The sun was getting very near the horizon when the two smugglers kindled a fire to prepare their meal. The black smoke from the resinous pine knots searched me out and choked me till it found a new highway.

Finally one of those below leaped to his feet.

"Here! we're taking things too easy," he said. "We've got to hide the lug."

"Ain't it hid?" shouted another, evidently in consternation.

"Hid! If that Government beak should be here he'd show you if it's hid!"

They pulled a bag out of a clump of saw-palmetto and extracted a package wrapped in black oil-cloth. One removed the wrappings.

"Let's have a look at the shiners," said the stupid one.

"Don't be too free with your gab!" cautioned the other. "These are the ones all right," he added, replacing the wrappings; and they were off through the darkness, splashing into the swamp.

My heart sank as I realized the boxes Joseph DeLong so much wanted were gone. Hope flickered out, as did the fire below. But I strained eyes and ears for signs of them.

Finally I caught a glimmer of light high up among the trees of the swamp. It

wavered a moment and went out. In ten minutes it showed again—and that was all, till they came splashing back.

Having replenished the fire, the leader made a diagram on the ground. I heard little and saw less, but this much I caught: *"First magnolia—second magnolia—third—that's the one."*

Then there came from the swamp the most unearthly and blood-curdling scream I'd ever heard.

The two smugglers leaped to their feet.

"Oh, that's only a yahoo," said the one.

"What's a yahoo?"

"A kind of wild-cat."

"That must have been his nest we——"

"Oh, huck your gab! You'll sell us yet with that loose tongue of yours."

At intervals of about thirty minutes during the night that fearful scream was repeated, filling me with dread; and then my cramped position gave me much pain. How I wished for home!

Daylight brought relief from the screaming in the swamp. I munched crackers and cheese while the smugglers slept below. I would have given all my grub for a draught of water.

The sun was high when the two got astir. Hour after hour they cursed, smoked, and slept turn about. I suffered greatly from the pain of my position and that fearful thirst. It was long past noon before there was any promise of relief.

Then at last happy music came to my ears. I recognized the peculiar sweet tone of Joseph DeLong's whistle. It was as if it came from some strange bird. It attracted no attention from the men below.

I soon discovered my friend coming cautiously on, and he repeated his call. I looked at the smugglers below, with their rifles within easy reach, and wondered what was now due to happen—Joseph DeLong all alone—I self-treed and unable to respond to his call to me.

I could see that he was becoming alarmed at my non-appearance. Directly he stepped boldly forward, throwing caution to the winds; and now he blew desperately in his whistle, so that it shrieked.

With fear I looked down on the smugglers, whose forms stiffened in alarm. And then they reached for their rifles.

I felt a turmoil all through me as I realized Mr. DeLong's danger.

"Hands up!" I called. My voice was harsh and ominous from emotion.

The hands of the astonished two went up instantly.

I tore the heavy revolver out of my pocket and pointed it down on them. Then I put two fingers of my free hand to my mouth and blew the notes with which I had been used to call Joseph DeLong to mess. I'd repeated the call thrice, when he burst onto the scene, his revolver ready.

I could see his astonishment at finding the two smugglers with their hands in the air. But he lost no time in taking away their arms, and they offered no resistance.

"Now then, Nat," he called, "where are you?"

"Up here, in the palm," I answered.

"Well, I'll be darned!" He glanced up, but without seeing me.

"You'd better come down," he said.

Though stiff and aching, I managed with little delay to get to the ground. I couldn't stand erect for some minutes. Joseph DeLong scratched his head as his wondering eyes turned on me.

"Now, Nat, if you'll keep them covered, I'll decorate them."

Out of his pocket came a bright little bundle of bracelets, which he snapped over the uplifted hands before I could well see what he was about; each pair of hands so bejeweled was joined to the other by a

slender, bright chain. Seated thus linked together, the two smugglers looked at each other with comical expressions—contorted with the labor of regaining equilibrium.

When I had rubbed some life into my limbs and had had my fill of water, Joseph DeLong, keeping a wary eye on the chained pair, pulled me aside for confidence. He told me how, after a long chase, he had captured the other two smugglers with the help of two cow hunters, the smoke of whose fire he had discovered in the forest. And now they had the two prisoners under guard two miles back.

"Their bundles," he said, "held nothing but cigars regularly stamped—and every one is leaking badly now." He laughed over some recollection, and he added: "My helpers thought it was an infernal shame to spoil good smokes like that. Now, Nat, boy, I want to know how you got up into that palm; that's the last place I expected to find you."

He was greatly interested in my tale, and when I had finished he said: "Do you think you know the directions?"

"Yes, I think so," I replied.

"Well, let's get after it," he said.

I led the way into the swamp, Joseph DeLong driving the prisoners. Piecing together all the information I had gathered from the smugglers, I finally located what I judged to be the "third magnolia." I turned my eyes upward, and there, high in the crotch of three stout branches, I saw what looked like a squirrel's nest. I lost no time in climbing to it, and I came down with the heavy black package. Joseph DeLong took the package, unwound the oil-cloth and discovered two cigar boxes.

"These are also regularly stamped, you see—nothing wrong so far," he said; but his eyes smacked for a feast in store. I saw the green stamp around the box, like any other I'd ever seen. He pried up the lid and disclosed the rows of cigars.

"Those are worth more than two for a quarter," he said, smiling, as he put his hand in his pocket and fetched out what looked like a hair brush of metallic bristles. But the bristles, I saw with wonder, were all sharp, steel needles.

He laid one of the cigars on top of the box and pressed his needle-brush down upon it, perforating the cigar in innumerable places—so I learned it was thus he "spoiled the smokes."

"They're there!" he said, giving me a pleased smile. He out with his knife and slit the cigar from end to end; then prying it open with his thumbs, he held it to my eyes.

"There they are!" he said, triumph shining in his face.

I gazed on a row of large brilliants, glinting every color in the half-light of the swamp.

"Diamonds!" I said, under my breath.

"Yes," he said, "and you can believe me, they're all full of them."

He tried each cigar of the top row with his needle-brush, and pronounced them all laden with diamonds. Now I grasped it all.

"We mustn't let a single cigar get by us"—"something like forty thousand"—"I want to get those certain two boxes." These were the things he'd said. And what a brilliant solution was this!

With the help of the Florida cowboys we hastened our prisoners to town, where we surprised Tom Wasson, who became the object of dark looks from the four for his supposed failure to erect the right signal down on the key. He, for his part, was apparently dumbfounded to learn that his signal of "Danger" had not been heeded, and bewildered as well as to how his connection with the smugglers had been discovered. There was a smile in this between Joseph DeLong and myself.

Scouting for Icebergs

BY CAPT. C. A. McALLISTER
ENGINEER IN CHIEF, UNITED STATES REVENUE-CUTTER SERVICE

MANY of you will remember the thrill of horror which swept over the civilized world in April, 1912, upon the receipt of the sad tidings of the terrible loss of over 1,600 lives by the sinking of the *Titanic* after collision with an iceberg in the North Atlantic Ocean. Here was the largest vessel afloat, supposed by all to be unsinkable, going down in but three or four hours after striking one of those silent and ghost-like masses of ice.

After recovering from the shock of such a catastrophe, the seafaring people of the world have taken up the problem of safety at sea with renewed vigor and a determination to overcome what seem to be insurmountable difficulties. At a recent conference in London of delegates from all the great nations of the world, new rules for building ships as well as new rules for navigating them have been adopted, and if these are carried out in the right spirit it is doubtful if any such great accident can happen again.

Among the plans adopted for the safety of ships at sea, was to provide for an annual patrol of the ice fields of the North Atlantic Ocean during the months when the bergs drift out into the courses of the trans-Atlantic steamships. During the two years following the loss of the *Titanic* the United States Government has of its own volition, maintained such an ice patrol by means of two revenue cutters detailed for that purpose. These staunch and seaworthy vessels, accustomed as they were to making long cruises in search of derelicts, were admirably fitted for this work. Their officers and crews entered upon this additional and hazardous duty with cheerful alacrity, notwithstanding its disagreeable features.

The plan adopted is for each cutter to patrol the ice regions for a continuous period of fifteen days, at the end of which time she is relieved by the other cutter, the latter having just returned from the headquarters at Halifax, Nova Scotia, where she had taken on coal and other supplies sufficient to last during her turn on the patrol. As it took three days to run out to the ice regions and three days to get back to Halifax, each vessel was required to be constantly at sea for periods of twenty-one days out of each month.

Arrived in the ice regions, the boat on patrol would proceed in search of the large bergs and floes which were drifting down to the steamship lanes. It is interesting to note that the masses of ice mostly originate on the east coast of Greenland, and in reality are sections of the immense glaciers which are slowly forced down the hillsides until they project out into the sea, and are either broken off by their own weight or by the action of the tides and waves. It frequently happens that large rocks and stones are carried down with the glaciers, as they are quite easily seen imbedded in the bergs when they get in the Gulf Stream.

As the cutter locates each large berg or floe, her officers make a note of the time it

is sighted and of its exact location. At six o'clock every evening she sends out a bulletin by means of her wireless telegraph set, giving information as to the whereabouts of all ice which has been located during the day. The first message is repeated three times, at intervals of two minutes, and using a wave length of 600 meters. At 6.15 p. m. this message is again sent out broadcast in a similar manner, but using a wave length of 300 meters. Those of you who have become amateur wireless telegraph operators will understand that this is necessary in order to suit the two principal adjustments of receiving sets now used on shipboard.

At 9 p. m. each day a full description of all ice sighted during the day is sent to the hydrographic offices at New York or Boston, which, by means of bulletins, give out the information to all steamships about to sail across the Atlantic.

Of course this constant cruising among the floating fields of ice is not what might be termed fun, as at nights and in foggy weather, and it is foggy there about half the time, the patrol cutter must be very careful that she does not collide with the icebergs herself. Very careful must be the navigation in such times, so that it is not an unusual thing for the cutter to drift aimlessly until the fog lifts. If clear of the ice the cutter is sometimes anchored, as the ice fields are largely over the Grand Banks and the water there is sufficiently shoal for a vessel to anchor. On rare occasions a comfortable berth for the night has been secured under the lee of a large iceberg.

Of course, you all know that a piece of ice so floats in the water that for every foot it projects above water there are seven feet under water. That is, there would be that proportion if the ice was of a regular figure such as a cylinder or cube, but icebergs are irregular in shape with the largest bulk below water. Above water they are usually peaked, so that you must not think because a berg is fifty feet high that it always extends three hundred and fifty feet below the surface. In drifting down towards the Gulf Stream many icebergs become grounded on the Grand Banks, and opportunities arise whereby their heights above and below water can then be observed. From many measurements taken on grounded icebergs the conclusion has been made by the captains of the revenue cutters that an average iceberg with a peaked top projects about a third of its total height above water, and two-thirds under water.

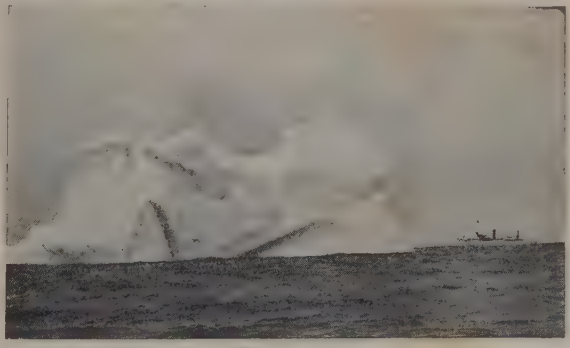
There is always much guesswork as to the sizes of icebergs. Reports from trans-Atlantic steamers are frequently published which describe bergs as sometimes 500 feet high, and as much as a square mile in area. As a result of two years' experience in the ice fields Captain Johnston of the *Seneca* reports that the tallest iceberg he ever sighted was only 150 feet high, and that the largest berg which he measured was a flat-topped one, fifty feet out of water, six hundred and fifty feet long and six hundred feet wide. He estimates that this particular berg weighed over five million tons. It is quite easy to make a conjecture as to what would happen to a steamer of even sixty thousand tons displacement should she strike a berg of that description.

The results of the ice patrol by revenue cutters for the past two years have been so valuable to the shipping interests that at the Conference on Safety at Sea held in London, above referred to, seven of the great maritime nations of the world agreed to share the expense of future patrols with the United States, the amount each nation is to pay being proportioned in accordance with the relative number of its ships which cross the North Atlantic.

In the Realm of the Icebergs

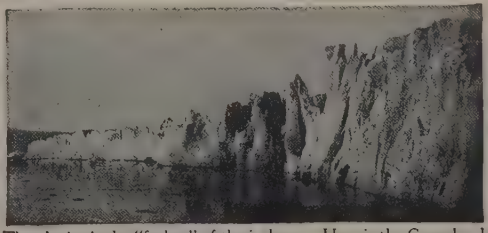
Above—The Scout ship *Miami* surrounded by ice.

At the right—Berg 130 feet high and 450 feet long, sighted April 25, 1914. The *Miami* is seen nearby.



At the left—Sailors from the *Miami* filling the ship's ice-boxes off the Grand Banks, Newfoundland, on April 12, 1914.

Scout ship *Miami* anchored off Newfoundland for the purpose of taking current observations



The glacier is the "father" of the iceberg. Here is the Greenland Glacier entering the sea. It is three miles in width

Peary at the North Pole

Above: Peary's North Pole Sledge

Admiral Peary, Discoverer of the North Pole

Below: Marvin, of the Explorer's Party, with Team of Eskimo Dogs

Nalegaksoah, King of Peary's Eskimo Dogs

The *Roosevelt*, alongside a Glacier near Cape York

The Stars and Stripes at the North Pole, April 6, 1909

The Bold Dream that at Last Came True

How Man and Dog Won the Great Battle With the Cold at the Top of the World

BY Rear-Admiral ROBERT E. PEARY, U. S. N.

The goal is won. White desolation lies
About the ageless axle of the earth;
While robbed of warmth, the never-setting sun
Circles above a world where life is not.

LAMBERT R. THOMAS.

April 6, 1909. A bitter, brilliant day, the temperature 65° below the freezing point. Wide stretching ice fields, covering an ocean two miles in depth, a sky of blue, and a blinding sun sweeping slowly round the heavens, parallel with the horizon.

A region into which in all the ages since the earth was born no human being had ever penetrated. The North Pole. The splendid, glittering, frozen prize of centuries.

Six fur-clad figures, representing three great races, the White, the Yellow, the Black; five groups of splendid Eskimo dogs; five long, narrow, curved sledges; two little beehive-shaped snow huts in the lee of some upheaved ice blocks; and on the highest pinnacle of ice a flag waving gently in the breeze—The Stars and Stripes. Your flag and mine.

Never shall I forget it; and I don't want you to, for it was the result of dreaming a dream, then working for the realization of the dream through twenty-three long years, with every energy of brain and soul and body concentrated on the one subject.

Now let me tell you briefly the story.

A LITTLE less than 400 years ago, in 1527, England sent out the first recorded expedition in search of the North Pole. Eighty years later, in 1607, Henry Hudson made his historic voyage. From that time on for 275 years Great Britain held the record, slowly pushing the record up to 83 degrees 20 minutes, north latitude.

Then, in 1882, the lead came to the United States. Thirteen years later Norway went to the front, and in 1900 a member of the Royal house of Italy, the Duke of the Abruzzi, grasped the blue ribbon. Six years later the United States took the lead again, with a record of 87 degrees 6 minutes.

So matters stood in the spring of 1908, when the Peary Arctic Club, of New York City, was fitting out its last North Polar expedition.

This club is an organization made up of men prominent in business and social circles, some of them of international reputation. Its President is General Thomas H. Hubbard, its Vice-President

Zenas Crané, and its Secretary Herbert L. Bridgman.

The expedition left New York on July 6, 1908, in the steamer *Roosevelt,* built by the Club, and commanded by Captain Robert A. Bartlett; was reviewed by President Roosevelt, and steamed northward, arriving at Cape York, North Greenland, August 1.

Eskimos, dogs, furs, etc., were obtained in the Eskimo country, and on August 18 the *Roosevelt* steamed north through the narrow, ice-encumbered channels forming the American gateway to the Pole.

Winter quarters at Cape Sheridan, on the north coast of Grant Land, 450 miles from the Pole, were reached September 5. Here the expedition wintered, hunting, making equipment, and transporting supplies westward to Cape Columbia.

The first division of the Northern sledge party left the *Roosevelt* February 15, 1909, the last division February 22. The entire sledge party left Cape Columbia, heading due north, March 1, the expedition comprising twenty-four men, nineteen sledges, one hundred and thirty-three dogs.

Four successive supporting parties, in command of McMillan, Borup, Marvin and Bartlett, returned at various intervals, the last, in command of Bartlett, from the 88th parallel.

The main party, under my command, six men, five sledges, forty dogs, pushed forward by forced marches to the Pole itself, where it arrived on April 6, 1909.

Here, in the midst of great fields of heavy ice, covering an ocean two miles or more in depth, with the sun circling round the sky day after day without setting, the Stars and Stripes were planted, and a record left with a piece of the flag.

Returning, we left the Pole April 7, and after a series of forced marches regained Cape Columbia April 23 and the *Roosevelt* April 27.

July 18 the *Roosevelt* started south, and September 5 reached the wireless station at Indian Harbor, Labrador, whence the message, "Stars and Stripes nailed to North Pole," was sent flashing over the world.

The discovery of the North Pole stands for the inevitable victory of persistence, experience, endurance, over all obstacles.

It is the cap and climax, the *finish,* the closing of the book, on 400 years of history.

The great lesson of the conquest is the infinite value of persistence and sound physique.

The key to final success was *experience.*

Every member of the party was fully imbued with the spirit of two mottoes: *"inveniat viam aut faciat"* (Find a way or make one), and, "Hope for the best, but be prepared for the worst."

Although this is the age of science, of invention, of wonderful progress, it is interesting to note that the North Pole was won in the last stage (as was also the South Pole) by the two first machines on earth, the human organism and the animal organism, man and the Eskimo dog, driven through such a chaos of natural obstacles as are to be found nowhere else on the face of the globe; and winning by pure insistence of the perfect man body, elastic, adjustable, animated and driven by that God-given flame of intelligence which we call the brain.

Boys, guard and cherish your God-given bodies as a priceless heritage. Watch them and keep them clean and in perfect adjustment. Don't let the bearings get hot. Then with their normal running they will give you health and happiness, and win you a place in the world,

and when the supreme moment comes, as it will to some of you, when everything of ambition and success rests in a supreme and sustained effort, then you can pull the throttle wide open, and let them drive you to your prize ahead of all competitors.

Hold fast to the creed of my dear friend George Borup: "Clear brain, clean body, persistence, a heart that will not accept 'no,' and you can win any prize."

Our remedies oft in ourselves do lie,
Which we ascribe to heaven. The fated sky
Gives us free scope; only doth backward pull
Our slow designs when we ourselves are dull.
—All's Well That Ends Well.

When You Cook Out of Doors

NEVER fry over a flame; the fat will easily catch fire.

Frying requires little heat. If your fire is too big, take a stick and rake some coals off to one side to fry over. Get your pan quite hot before you grease it. Then put in just enough grease to keep the fish or beef or flapjack from sticking to the pan. Too much grease, or grease that is not hot enough, makes the stuff sodden and indigestible.—H. K.

To fry eggs without a frying pan or a tin plate, find a flat stone, wash it off, and set by the fire to dry. When it is dry, build a little wall of stones around the fire, and set the clean stone on top. When hot, grease with lard or butter and put on your egg. It will fry to a delicious brown. —F. W.

For a "fireless cooker," dig a round hole in the ground, a little larger than your kettle, and line the sides with flat stones. Do not use sandstone, as it will crumble with the heat. When ready to cook, build a fire of hickory shell bark in the hole, placing the cover stone at one side where it will get its share of heat. Your fire will be a good hot one, and it will leave very little ashes. When the fire has burned down and the stones are hot, put in your kettle containing what you want to cook, place the hot cover stone on the lid, and lastly bank over thoroughly with earth. When you return after several hours, if you have prepared things properly, you will find a warm and savory dinner awaiting you. Always cook foods that need a lot of cooking, such as beans, in this oven.—C. H. B.

Dried apples, peaches, apricots or prunes are almost essential in a camper's rations when he cannot get fresh or canned fruit. They are not very tasteful when stewed without previous soaking. To make them really good, soak over night in just enough cold water to cover them. In the morning simmer them a few minutes in the same water. Apricots and prunes are best, for they supply an acid that the system craves and needs.—H. K.

Before the Life-Savers

What David Gray Did When a Storm Wrecked a Bark Off Turtle Island

BY THE CAPTAIN OF STATION X

TURTLE ISLAND rises high and rocky just off the rugged coast of Maine. It is a little island, and you can walk all around it in an hour. Only a handful of people live on it—a few fishermen, the crew at the life-saving station, and David Gray and his mother.

David was born on Turtle Island, and he spent all his life there except for an occasional trip to the mainland towns in the trim boat of Big Tom Jurin, the captain of the life-saving station.

He was the only son of his mother, who worshiped him, but who didn't, on that account, baby him or allow him to become a "sissy." She wanted him to be a brave, strong man like his father had been—for Jim Gray had been known along the whole coast of Maine for his skill and bravery as a member of the life-saving corps, until that fatal night, eight years before, when his life was crushed out by a falling spar from a sailing vessel which was wrecked on Turtle Island in a terrific winter storm.

David, at that time, was only six years old, but he knew the story well, for his mother had often told him of his father's noble life.

"Some day, David," she often said, "you will be big enough to take his place."

Mrs. Gray allowed her son to spend a great deal of his time on the sea in small boats and to go aboard the steamers and sailing vessels which, in bad weather, sheltered under the island in smooth water. But the greater part of Dave's time was spent at the life-saving station, where he was always a welcome visitor. In this way he became familiar with the talk of sailors, learned everything about the rigging of ships and became able to put his hand to all sorts of odd and useful tasks.

But Dave prided himself most of all on his ability to handle a small boat, and on his peculiar knowledge of the tides and currents in the neighborhood of the island.

He knew exactly the best places for anchorage, and he knew exactly where the stiffest puffs of wind swept off the land, and where they could best be avoided.

Time after time Dave was told that he ought to be a pilot, but he had set his heart on joining Big Tom's life-saving crew as soon as he was old enough.

David's mother had a small house and a small pension, and with the help of her son, the little family managed to live in comfort. The lad was as good as a trained servant about the place. He had noticed that the life-saving station was always spick and span and he decided that he must learn how to keep a house in that condition if he was ever to be a member of Big Tom's crew.

Dave took a special joy in preparing breakfast on Sunday morning, and taking it up on a tray to his mother, and it was a weekly treat that she relished as keenly as her son.

"If I was wrecked on a desert island,"

said Dave one Sunday morning as he was sitting at his mother's bedside while she was eating her breakfast, "I am sure I would be just as good at inventing things as Robinson Crusoe was. That comes of living in a little place like this and having to do all sorts of odd jobs to make ends meet."

He got up and went to the window and looked out over the sea.

"Gee, but this is a nasty day," he said. "Here it is June, and almost as cold as December. It's blowing like the dickens, and there's a fog as thick as smoke. I guess I'd better go down to the beach and see if there's any luck. With a wind like that blowing all sorts of useful truck ought to be washed ashore. If a timber ship's around, she's sure to have cleared out her deck cargo a bit, and I might get enough wood to last us all through the winter."

"All right," said Mrs. Gray, "but——"

"Yes, I know, mother," said David, laughing, "you're going to tell me not to get into any danger. It's too windy to go out in the boat, so you needn't worry about my getting drowned today."

He kissed his mother good-bye and made his way down the steep path to the little beach where he always landed his boat. At this sheltered spot there was not much evidence of the storm that was raging on the other side of the island, but the surf on the beach indicated that the sea must be running high. Dave looked eagerly around for signs of driftwood, but he saw none.

He was about to return home when, in a temporary clearance of fog, he saw a sight which almost made his heart stop beating.

Through a rift in the dense atmosphere he could see, two or three hundred yards away, the rigging of a vessel and human beings clinging to it.

Dave knew at once that a ship was wrecked at the deadly spot which is called Hell's Gate, and that most probably these men who were clinging to the rigging were the only survivors.

He looked eagerly around him, hoping to see someone who could help him to raise an alarm, or to undertake rescue work.

He glanced toward the life-saving station; but the buildings were obscured by the fog, and Dave saw at once that the men could not even get a view of the wreck.

He thought of rushing to the top of the cliff and raising the alarm; then he glanced at the rift in the fog again and saw how precious time was, and how swiftly he would have to act if the shipwrecked men were to be saved, so he hurried up the pathway for some yards and entered a dark old cave which was used as a boat-house.

In the very mouth of the cave was a small boat in which Dave had spent many happy hours.

The little craft was on rollers, and accordingly Dave had no difficulty in getting it down to the beach and afloat.

As he pushed off, he jumped in, drenched to the skin, for the boat had shipped a sea. But he was used to getting wet, and paid no heed to this discomfort. His only thought was to get to the men in the rigging and save them.

Luckily it was flood tide, and the tide would flow for several hours, and this fact gave Dave a feeling of security which greatly encouraged him. He knew how dangerous it would be to put off alone in a strong ebb tide in such weather, for with the tide going that way the chances would be that he would be blown out to sea and never heard of again.

Dave rowed quickly toward the wreck,

and after an exhausting pull, and many narrow escapes from swamping, he was within hailing distance of the men in the rigging.

He saw that the vessel was a bark, and that she was a total wreck, hard and fast on the rocks. Only her masts were above the water, and in the rigging of the mizzen four men were clinging for very life. Dave headed his boat towards them and hailed them in a shrill voice.

"I'll get the boat head on to you," he shouted. "When I do that, jump in as quick as you can—and we'll take our chances in getting ashore. Don't waste a second!"

Three of the men appeared utterly exhausted and helpless; but the fourth had life and energy enough to shout an answer which Dave did not hear; but he imagined that the man was promising to do as he had been instructed.

When the bow of Dave's boat almost touched the rigging, this man, who seemed to be a leader, helped one of his companions into her.

The man was dazed and helpless, and at first he refused to let go his grip of the rigging; but one or two stern words, coupled with Dave's loud cries that not an instant must be lost, caused the man to drop into the boat, where he collapsed in the swishing water on the bottom-boards. The second and the third man followed, and then, making a desperate leap as the boat was swept away from the rigging, the fourth man crashed into the boat, and nearly capsized it.

The rescue so far had been quick and skillful and Dave felt proud and elated; but he knew that the worst of his work was before him, for he had a deeply-laden craft, and only one pair of oars.

He shuddered to think of what might happen if an oar snapped, as it might do easily under such a terrific strain; and he really did not know how he was going to land on the little beach, where the surf was breaking heavily.

His heart began to fail him a little, and his strength was rapidly dying away.

The four survivors were lying helpless and almost unconscious in the boat, a dead weight, and the wind and sea threatened to sweep the tiny vessel and the people in it to swift destruction.

Dave was as hard as iron, and he knew every trick of handling a boat. If it had not been for these things he would have pulled for the last time when he got clear of the wreck, because he was in a perfect smother of broken water.

The dense mist made it impossible to be seen from the island; he dare not try to land on the beach, for that would mean instant death in the surf, nor could he hope to reach shore by pulling into one of the rocky inlets.

The tide was running very strongly, and Dave realized that he was in dread peril. There seemed to be no hope of salvation, and grim death was apparently at last confronting him.

But a sudden inspiration came to him and he gave a wild cry, which made the exhausted leader of the party raise his head wearily.

"There's just a chance!" cried Dave. "Just a ghost of a chance!"

The leader clearly heard the words, and fresh strength seemed to come to him.

"Can you bear a hand?" Dave shouted.

"I—I think so," replied the leader, "but we are more dead than alive. We have been in the rigging all night."

"You *must* try or we are gonners!" shouted Dave. "Try to do as I tell you—you're not a sailor, I can tell that, but maybe you can manage. Look out for a wire rope, and when I say, 'Grab!' catch

t, and hang on for your life! Don't let go, even if your hands get torn! If you do, we'll all go to the bottom."

"Tell me just what to do, and I'll obey," eplied the leader.

"Sit up." yelled Dave, "and when I hout 'Grab,' you grab!"

The man sat up in the stern sheets, and vatched with deep admiration the wonderful performance of this lad whose muscles seemed to be made of whipcord, and who clearly had the courage of a true ero.

Dave continued to pull strongly and kilfully, while the man in the bow of the oat waited for the warning cry.

It was not long before Dave's shrill oice was heard again.

"Now! Quick! Grab!"

Almost before he realized what had appened the man had thrown his arms ut and seized a stout wire rope which ad almost touched his head—a rope that as made fast to the bottom of the sea t the one end, and that sloped steeply up o the top of the cliff to the life-saving tation.

"Hang on for your life!" screamed Dave.

Then, with what looked like frantic aste, the boy shipped his oars, snatched he painter, and while the man clung rimly to the hawser, made his own rope ecure.

He had no sooner done so than a wave wept the boat away, and wrenched the ire rope from the man's torn and bleeding hands.

"It's all right!" shouted Dave joyously. We're safe now! The fog's just lifted, nd they've spotted us from the station!"

Dave had been seen by the men at the tation, and there was intense excitement mong them.

"There's that young stormy petrel, David!" shouted Big Tom. "And, by thunder, he's got some shipwrecked men in his boat!" And he dashed into the station, from which he soon emerged with the breeches buoy rigging in his arms.

"Jones," he ordered, as he attached the buoy to the hawser, "you hustle into the station, start a roaring fire and get some hot drinks ready. Those men have probably been in the rigging for hours in this storm."

Then he sent the buoy rattling down the cable.

Dave caught the contrivance and with the help of the only one of the survivors who was able to assist he managed to get one of the exhausted men into the breeches buoy. Then he waved a signal to the men at the station that all was ready and they began to pull on the rope.

Up went the buoy with its human burden. But fifty feet from the boat it stuck fast! Dave could see that a loose strand from the hawser had become tangled in the pulley of rigging.

The sea was still running high and Dave knew that the boat was in danger of swamping at any moment and throwing its occupants into the churning water. This might happen before a life-saver in a spare buoy could be sent down the hawser to straighten out the tangle. A few seconds' delay might prove fatal!

But Dave saw a chance to save time. Grasping the cable in both hands he swung clear of the boat. The hawser sagged under the lad's weight until his legs dangled in the sea. A huge wave struck him with awful force, but he tightened his grip and hung on doggedly. As soon as the wave had passed he quickly worked his way up the cable hand over hand. Another wave struck him and in spite of the strain on his arm he still held his grip, for he knew

that an instant's weakening would send him to certain death.

Before the next wave struck he had climbed beyond its reach. On he went, carefully working his way to the buoy and keeping his eyes on the hawser, as he hardly dared to look at the huge waves which leaped at him as though eager to drag him down to destruction.

With a final effort he reached the suspended buoy and a great cheer went up from the life-saving crew who had been watching his hazardous progress.

Quickly he thrust his legs over the shoulders of the unconscious man in the breeches. This relieved the strain on his arms and left them free to work on the cable. He jerked the tangled strand out of the pulley and bent it back and forth rapidly until at last it snapped off close enough to the cable to allow the pulley to pass. A frantic signal announced to the anxious men on the cliff that the buoy was free and an answering tug on the line sent it rolling toward the top of the cliff, with the unconscious man in the breeches and Dave sitting astride his shoulders. They reached the top just as Big Tom came running from the station with an extra set of rigging.

The captain jumped into the buoy and went down to the boat to send the other three survivors ashore.

After the last man had reached the cliff Big Tom himself came up.

"David," he said gravely, as soon as he had climbed out of the awkward rigging, "you did well, lad."

And as Big Tom gripped his hand, Dave felt a funny creepy feeling run up his back and such a big lump came into his throat that his voice sounded queer and quavering as he stammered, "I—I—I tried to, sir."

The Desert Indians' "Fire Bed"

THE Indians of our "American Sahara" are compelled by circumstances to overcome conditions not encountered by their brothers of the plains and mountains.

The "fire bed" is among the most useful and original methods employed by them to "sleep warm," in the "open," as in fall and spring the nights are very cold.

A shallow trench is "scooped out" in the sand, about six feet in length, three feet wide and six or eight inches deep. The sand is "banked up" on the sides, and a fire is then made in the "pit," covering the entire length. This not only warms the bottom but the banked sides as well.

After the fire has burned long enough to thoroughly warm the sand, the larger unburned sticks are thrown out, but all live coals are left in the pit. The sand on the sides is now covered over the coals to a depth of about four inches. The "sleeper" will then lie down in the warm sand and, if he possesses a blanket, will throw it over him, thus keeping in the heat, and sleep warm.

I have tried this out myself many times, both upon the desert and in the mountains, and have never suffered from the cold. At the same time, it also saves packing an excess of blankets.

A Boy Talks Across the Continent

Melville Bell Grosvenor, Age 13, Telephones from New York to San Francisco

THE first boy to telephone across the continent is Melville Bell Grosvenor, a thirteen-year-old lad of Washington, D. C. Melville is a grandson of Alexander Graham Bell, the inventor of telephony, and he was one of the guests of honor at the formal opening of the transcontinental telephone line on January 25, 1915.

Along with Mayor Mitchel of New York, "Grandfather" Bell and other distinguished guests at this opening ceremony, Melville conversed with distinguished men at the other end of the line in San Francisco, 3,400 miles away.

Of course every boy in the country has heard of this wonderful new telephone line connecting San Francisco with New York, Philadelphia, Boston and other eastern cities, and has felt a thrill of pride knowing that this remarkable achievement has been made possible through the genius and persistence of American inventors and electrical engineers. But there are some very interesting things connected with this new telephone achievement of the American Telephone and Telegraph Company which most boys probably have not heard about.

How the Voice Flies

Suppose a boy in New York were able to speak loud enough for his voice to carry to San Francisco. How long do you think it would take the sound to travel across the continent? Sound travels at the rate of 1,160 feet per second. The distance from New York to San Francisco is 3,400 miles. So it would take a boy's voice about four hours to travel from New York to the Golden Gate.

How, then, is it possible for your voice to be transmitted almost instantaneously over the telephone? As a matter of fact, transmission of sound by telephone is not instantaneous, although for short distances the length of time consumed is too brief to be measured. When Melville Grosvenor spoke into the telephone in New York on January 25, it was only one-fifteenth of a second before his voice was heard at the other end of the wire, 3,400 miles away.

The explanation of this wonderful feat of sending the sound of a voice across the continent in one-fifteenth of a second is found in the fact that it is not sound, or air, waves which are transmitted, but electrical waves. Electrical waves have a speed of 56,000 miles per second. When you speak into a telephone transmitter the sound waves of your voice are converted into electrical waves. These waves travel over the wire to the telephone receiver at the rate of 56,000 miles per second, and the receiver picks up these elec-

trical waves and transforms them into air waves so that the sound of the voice is accurately reproduced although the actual sound of the voice of the speaker goes no farther than the transmitter into which he speaks.

"Waves" Mustn't Get Tangled Up

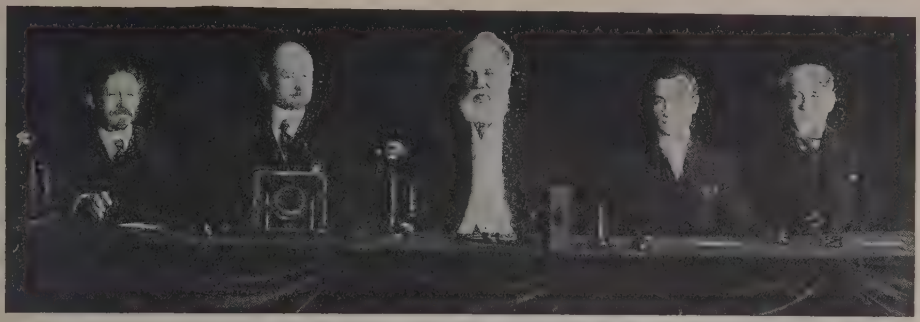
This seems simple, but it is really a most complex problem. These waves, having been faithfully converted from air waves into electrical waves and sent out on their journey over the line, must not interfere with each other; they must not tumble over each other, so to speak, or get in each other's way; they must be sent out, nearly 50,000 of them, every minute. Some of them have one shape and some another. They are just as different from each other as the waves of the sea. These differences in shape, the distance between them, the time between them, must be faithfully preserved and conserved, so that at no point in their journey will they be changed sufficiently to be noticed. It is not the problem of sending one simple current, but as many as 120,000 a minute. All of these minute currents, millions of them—millions and millions in a conversation—must be carried electrically over the line to San Francisco and then converted back again into sound waves which agitate the air of the room and affect the ear as air waves.

130,000 Poles

It may be interesting to the readers to know something about the material required in building this transcontinental telephone line. From New York to San Francisco there are 3,400 miles of hard drawn copper wire of No. 8 B. W. G. gauge. There are four such wires from which are derived two physical circuits, and one phantom circuit. The diameter of each wire is .165 inch. The weight is 870 pounds per circuit mile; that is 435 pounds per mile of each wire, two wires being required for a circuit. The total weight of one circuit of two such wires is 2,960,000 pounds, or 1,480 tons. In the line itself there are 130,000 poles. In addition to this there is the wire used in the Pupin coils. This wire used in these coils is of .004 inch in diameter. For each physical circuit of the line, in addition to the 6,800 miles of copper wire, 13,600 miles of this hair-like wire is used.

If you will look at the map reproduced on page 75, you will see the enormous distance between the largest cities on this new across-the-continent telephone line, which will give you a clearer idea of the wonderful thing that happened on January 25, 1915.

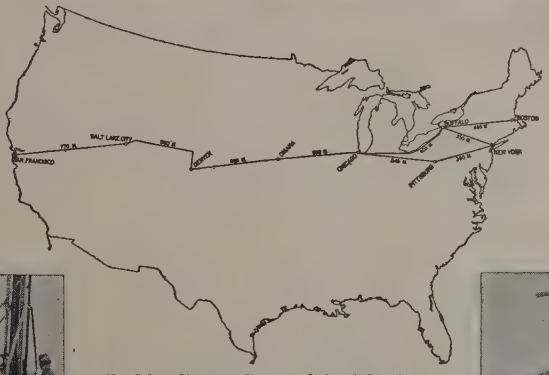
First to Talk Across the Continent



(1) Famous Men Who First Talked from New York to San Francisco

"Train" of the Men Who Finished the Line

Hauling Poles in the Sage-Brush Country



(3) Map Showing Route of the Atlantic-to-Pacific Telephone Line

(2) Boring Postholes in Lake Bed

(4) Setting a Pole in a Salt Sink

The Pictures

(1) *Beginning at the left end, those in the historic group at the top are: Mr. George McAneny, President, Board of Aldermen, New York City; Mr. U. N. Bethell, Senior Vice-President, American Telephone and Telegraph Company; Dr. Bell, the inventor; Mayor Mitchel, of New York City, and Mr. C. E. Yost, of Nebraska.*

(2) *In Humboldt Lake, Nev., two miles of poles (80 in number) were set in water from 18 inches to 8 feet deep; the picture shows the machine used to bore the holes.*

(3) *Note the enormous distances between the largest cities on this transcontinental telephone line.*

(4) *This shows some of the difficulties of polesetting in the "wild" parts of the West*

Fun in Camp

Boxing

Somebody Must Rustle Up the Wood for the Camp-fire.

Photograph from Scout Commissioner O. E. Loomis, Boston.

"Spearing." A Scout game which provides much fun—especially for the crowd.

All In

A first-thing-in-the-morning plunge in camp.

Each First Class Scout must be able to swim at least 50 yards.

The Duffel Bag

BY DANIEL CARTER BEARD
NATIONAL SCOUT COMMISSION, BOY SCOUTS OF AMERICA

Of course I will tell you what "duffel bag" is, but I really thought that every Scout knew, as every camper does, that a "duffel bag" is a bag containing camp duffel; that is, camp baggage, camp equipment. That is why I chose "duffel bag" for my heading.

The duffel bag is generally long and cylindrical, made of waterproof canvas with a hanlde to carry it like a gripsack, and it either laces up or is locked on the end with a padlock. As a rule a lock is unnecessary; a dishonest person passes them by as unattractive and not suggesting wealth, which is a fortunate thing for campers.

My old duffel bags have been from Florida up almost to Hudson's Bay, and several times from the Atlantic to the Pacific Ocean, besides innumerable side-trips. They are old and travel-worn, but I love them, and many a night I have slept with one under my head for a pillow.

FELLOW Scouts, don't fight your pack! Do you know what "fighting your pack" means? I will go into the subject and explain.

In all new countries, when we carry a load we say we are "packing." We have pack horses and we carry packs on our own backs. This is so universal that the word "carry" is almost forgotten in the wilderness; there a man will ask you if you won't "pack that letter" to the settlements for him, and a pioneer woman will ask you if you won't "please pack a pail of water up from the spring." Consequently, when we say we are "fighting our pack" we mean we are fighting our load; that does not mean setting your load up against a tree and punching it with your fists, but it means that you are complaining and fretting because the load is heavy and the straps chafe your shoulders.

There are two kinds of packs, the pack that you carry day after day on a long hike, and the pack that you carry when on a canoe trip and you are compelled to leave the water and carry your canoe and duffel overland around some bad rapids or falls. The first named pack should be as light as possible, for on a long tramp every pound counts, because *you know* that you have to carry it as long as you keep going and there is no relief ahead except when you stop for your meals or to camp at night. But the last named pack, the "portage pack," the kind that you carry around bad pieces of water, may be as heavy as you can with safety, load upon your back, because your mind is buoyed up by the fact that *you know* you will not have to carry that load very far, the work will end when you reach the water again, and, strange to say, fellow Scouts, the mind has as much to do with carrying the load as the body. If the mind gives up, you will fall helpless even under a small load; if the mind is strong, you will stagger along under a very heavy load.

In School, or at Work, or at Play

Now that you know what a pack is, and what "fighting a pack" means, remem-

ber that if your studies at school are hard, that's your pack. If the work you are doing is hard, difficult or tiresome, that is your pack. If your boss is cross and exacting, that is your pack. If your parents are worried and forget themselves in their worry and speak sharply to you, that is your pack. Don't fight your pack, remember that you are a Scout, straighten your shoulders, put on your Scout smile and hit the trail like a man!

If you find that you are tempted to break the Scout Law, that you are tempted at times to forget the Scout Oath, that because your playmates use language unfit for a Scout you are tempted to do the same, if your playmates play craps and smoke cigarettes and laugh at you because you refuse to do so, so that you are tempted to join them, these temptations form your pack; don't fight your pack, don't give in and fall down under your load and whimper like a "sissy," but straighten up, look the world straight in the eye, and hit the trail like a man!

Some of us are carrying portage packs which we can dump off our shoulders at the end of the "carry," some of us are carrying hiking packs which we must carry through life and can never dump from our shoulders until we cross The Grand Portage from which no voyagers ever return.

Some Men Who Didn't Fight Their Packs

All our packs vary in weight, but none of them are easy to carry if we fret and fume and complain under the load. Belmore Browne, a great friend of the Boy Scouts, wilderness man, climber of Mt. McKinley, explorer, hunter and naturalist, will bear to his grave the marks on his body made by the straps of the pack he carried over the frozen Northland. When I asked Belmore how he carried the load he replied that he soon found that to "fight the pack" meant to perish, so when the pack wearied him and the straps rubbed the skin off his body he forced himself to think of one of the good dinners he had at the Camp Fire Club of America, of all the jolly stories that the toastmaster told, or of the fun he had at some other entertainment, and all this time he was trudging along and forgetting the pack on his back. In this way he learned how not to "fight the pack," but to FORGET IT. He braced himself up, looked at the snow-capped mountain range ahead, hummed a little tune and "mushed" on over the frozen snow at a Scout's pace.

The whole North country is sprinkled with the bones of the men who fought their packs. Our whole country is sprinkled with men we call "misfits" and failures, but who are really men who have fought their packs. But every post of eminence in the United States is occupied by a man who forgot his pack; this country was built by men who forgot their packs. George Washington carried a portage pack in weight all through his life, but it was a proud burden and he stood straight under it. Good old Abe Lincoln had even a heavier pack to carry, but in spite of the weight of it he always had a pleasant Scout smile for everyone, and a merry story to send the visitor away smiling. If Daniel Boone and Simon Kenton had fought their packs we would never have heard of them!

Pine Knot Torches for Camp

The most picturesque feature of any council fire that I have seen is the parade of Scouts with the lighted torches manu-

factured by themselves of the material found in the woods.

When the call for assembly by the bugler rings through the air one sees a lot of lights twinkling in the woods and as they approach nearer and nearer one discovers them to be the lights from torches held in the hands of the Scouts marching to the Council fire.

In the forest where the trunks of dead pine trees lie prone on the ground, coated with a covering of green moss and beautiful little partridge berry vines, there you may find the material for your torches. With your tomahawk knock off the protruding stubs of branches, or rather I should say, "knock them out" because these branches have roots extending into the wood like the roots of your teeth, and when you have secured them you will find that the butt or root is bulbous and heavy. That is because it is filled with pitch.

Even if it has been raining for a week and the ground is soggy, you may split up one of these pine knots and touch a match to it and you will get a flame like that of a candle. Indeed, I have often taken a number of these knots, put them in a pail of water and left them there while I talked to the council and then taken them out of the pail dripping, split them up into small slivers and astonished the Scouts by lighting the pine fragments while the water still dripped from my hands.

How to Make the Torches

To make a torch, take at least four slivers of pitch pine each of size of your little finger, bind them together at the bottom end with the pliable root of a tamarack, the twisted bark of a white hickory, a string made of milkweed fibers, the inner bark of the cedar or any other wild wood substance; then force two cross sticks down at right angles to each other between the torch sticks and above these bind the torch sticks again so that the top ends, which are the ends you intend to burn, are not touching each other, but close together, all of which I have illustrated in my "Field and Forest Hand

Book." In all the camps of which I have charge, it is necessary for the Scouts to manufacture a torch of their own from the material found in the woods in order to win a degree in woodcraft.

When It's Freezing Cold

It is very cold out in the woods of the Northern states in January and February, boys, and when you go on your hikes you should take good care that old Jack Frost doesn't nip your nose or your ears or your toes. If you can keep up the circulation there is little danger of this. I have had my forehead frozen, I have had both of my ears frozen, I have had the end of my nose frozen, and I have had my lip frozen, but always when I was driving or sleighing or in the cab of a locomotive, and never did it happen when I was on foot walking. So if you will be careful to have warm socks on your feet and keep the latter dry, there is little danger of Jack Frost bothering you while on your hikes.

If you break through the ice and get wet, and there is no place to dry your clothes, it will take but a few moments for them to freeze stiff, and the best thing for you to do is to keep at a dog trot until you come to some house where you can change your clothes and dry the wet togs in front of the fire. The dog trot will tend to keep you warm until you reach shelter; if this is too distant let the other fellows build a big rip-roaring fire for you, but you keep moving until the fire is built.

Don't "Crack" Your Ears

Recently I have seen it stated that warm water is best to take frost out of frozen fingers, toes, etc., but cold water will take the frost out, as I know by experience, and my advice to you in case of frost bites is to use cold water and let some other fellow do the experimenting with the warm water. I have used snow to rub my frozen ears into life, but they were not badly frozen. When an ear is frozen so that it is all white, you must be very careful about rubbing it at all, because in that condition it is exceedingly brittle and you may wound yourself seriously by breaking the ear. The same is true, in a sense, of any other portion of the body. But if there is only a small white spot on the lobe of the ear, I would not hesitate to rub it with a pinch of snow, or hold it in a cup of cold water until it thaws out.

Lumbermen working in the winter woods are not often frost bitten. I have spent weeks in camp with them, and although I was frost bitten from traveling around in the woods by sleigh or in their funny little locomotives which haul the logs over temporary tracks, I did not meet with a single instance among the lumberjacks themselves of frost bites, although the bottom had dropped out of the thermometer. They were swinging the axes, exercising, and keeping the blood circulating, and as long as the blood circulates it will not freeze.

Kites, Kite-making and Kite-flying

Ever since this country was settled, kite time began the first of March. In the middle West, along the Ohio River, the kites are made with match sticks covered with tissue paper and flown with thread for line. That is because of the light winds. The same kites that I made as a boy in Cincinnati could not stand the winds that we have on Long Island.

In some parts of the country, if you put a belly-band on a shingle and a tail on

it, it will fly. In other parts, the kite must be made of the lightest material, but Scouts are supposed to have gumption, and a boy with gumption will build a kite according to the strength of the prevailing winds in the part of the country where he lives. In my "American Boys' Handybook," and the "Out-door Handybook," I devoted chapters to kite building, and most of the kites are of my own invention. I refer to my own books not to advertise them, but because those chapters will give you some suggestions that might lead you to making inventions of your own.

About Some Kite Inventors

You know Lieutenant Hargrave in Australia invented the box kite, which is a biplane, or double biplane, and with it he raised a man in a swing hung from the kite. Then Lilienthal came along and made a glider on the lines suggested by the box kite. Lilienthal's glider was a success—that is, it was a success like a surgeon's operation in which the patient dies. Lilienthal was killed, but his death was not due to the principles upon which the kite was built. It was due to some defect in the kite's frame.

After Lilienthal, the Wright Brothers began to experiment with gliders, as Orville Wright tells you in his fascinating story given elsewhere in this Year Book. Fortunately, the Wrights were not killed, but lived to develop the modern aeroplane which is destined to revolutionize modern modes of transit, and also, in my opinion, will be the death of the gas bag that we call the balloon.

What My Father Told Me

My earliest recollections when playing around my father's studio are mixed up with a great big skeleton frame which corresponded practically, line for line, with the modern monoplane. I asked my daddy what it was. He took me up on his knee and explained it to me, although I was then but a little chap.

He said that that was a flying machine; that the trouble with the balloon was that it could not be successfully guided through the air any more than an inflated bladder could be successfully guided on the water, but a flying machine built on the lines of a bird could go in any direction, with the wind or against the wind, if it had a proper engine. He did not call it a motor—that is a modern term—he had in mind an engine small enough to be supported by it and powerful enough to propel it. He further said:

"I will never complete this machine because of a lack of the proper engine; but you, my son, will live to see the day when such machines will be flying through the air."

This incident made a deep impression upon my mind, and as soon as I was big enough to whittle the sticks and thread the frame, I began experimenting in the making of kites.

Something for You to Do

Now, fellow Scouts, I was not a bright boy; I was just an ordinary, healthy chap like lots of fellows you know. I was rather stolid. I did not stand at the head of my class. But on the shores of the Ohio river I invented many of the kites which are in use today, although the inventor is unknown by the users. You can do the same.

Those of you who are readers of my books will remember that in one of them I prophesied that the dry-as-dust old scientist would take up the boys' playthings,

the kites, and experiment with them and produce some sort of practical results. This has all been done. Now may I risk another prophesy, and say that some one of you Scouts is going to produce a new and valuable addition to kite-craft—a kite that may be used for some practical purpose, or a kite that may be used for amusement and pleasure. Don't forget that amusement and pleasure are just as practical as bread and butter, for without them life would not be worth living.

Do not make your kites too big. I know by experience that any boy can build a kite bigger than he can hold. Do not try to go up on your kite string—you might get into trouble. Learn how to wind a kite string as the boys of yesterday used to wind them—on a stick. Don't let the boys of yesterday have anything on you. Get busy.

About Jackknives and Whittling

I was down in a Pennsylvania town recently. The boys were called out to show me how to whittle. When they lined up for inspection—what do you think?—three of them had no knives!

What did I do? Oh! I pinned a little yellow ribbon on each one's right breast. That's a booby mark—a Chump mark. Having two knives in my pocket, I loaned one to each of two boys and the Scout Master furnished the third knife and so we went to work.

I began my inspection by asking them to let me see their knives. Then I watched to see how they would hand them to me. All the knives were open, and I am glad to say every Scout there took the blade in his hand and handed his knife to me with the handle presented. That was proper.

But when they went to whittle the sticks, a lot of them commenced whittling *towards* themselves, and I had to explain that there were only three kinds of people who whittled toward themselves: Indians, because they use a peculiar sort of knife of their own manufacture with a very limber blade and the handle is set at right angles with the blade which cannot cut them in the body even if it made a slip; the shoemakers, who use a very sharp knife and cut toward themselves, often giving themselves serious wounds by so doing, and boobies or Chumps, who whittle that way because they don't know any better.

Then I asked them to split the sticks with the big blades of their knives to get smaller pieces and many of them put the sticks against their breasts and commenced to split that way; that's *dangerous.* But some put the stick on the ground and pressed their hands on the knife and split it in the proper way so it could not do any harm to themselves or anyone else.

Oh, there's a lot to learn about whittling.

Did You Know This About Trees?

Speaking about nature reminds me of a discussion going on among the Scouts about the growth of trees. Many boys —and some Scoutmasters, too, for that matter—seem to think that if you put a hitching ring in a young tree, the ring will gradually grow higher and higher, as the tree grows, until it is out of reach. Now this is not true. I know of a hitching ring in a maple tree which I have seen every day or so for the last twenty-four years and it is the same height from the ground now as it was when I first saw it. But I am glad to say you cannot hitch your

horse to it now because the trunk is extending out around the ring and has almost covered it.

Right here let me point to all the Forester Scouts that a wound across a tree horizontally heals slowly or not at all, but a perpendicular wound, up and down, heals rapidly, and sometimes where you have round pieces of bark accidentally removed from the trees it is a good idea to extend the wound in a point at top and bottom, then the sides will come together and heal up, leaving only a scar on the tree. Horses should never be hitched to trees. Many of the beautiful and rare trees in Flushing, Long Island, my home town, have been ruined by the horses gnawing them.

Blind Things in the Caves

There was an interesting story in *Boys' Life* about the twenty-five Scotia Scouts who recently explored Haille's cave, camping first at the famous Indian ladder which goes straight up over a steep cliff. The boys took their Scout lamps and hiked to the end of the cave, two or three miles under ground.

Cave exploring is real man's work. Parts of Kentucky and Tennessee are filled with most interesting caverns, some of which I have visited and partially explored. I did not fully explore them for the reason that they were in that part of the country known as the "moonshine district" and some of my mountaineer friends intimated that parts of them were very "unhealthy." As I was their guest and not acting as a spy upon them, I explored only the "healthy" parts of the caves.

I remember one in particular. After going about 100 yards or maybe 100 feet, I was surprised to find the walls of one of the caverns alive with what looked to be big spiders, but what were really blind katydids. What these katydids lived upon I do not know.

There are blind fish in the streams and blind crawfish. In fact, these caves are sort of blind asylums for the little people of the woods and streams.

We had no Scout lamps, but we made pine knot torches like those I described in the last Duffel Bag, and traveled until half of the sticks were used up; then we turned back, arriving at the entrance just in time, for our torches were exhausted. It made about a four-mile trip.

A collection of the blind creatures from these caves along with the bats, newts, salamanders and bushy-tailed cave rats would make an interesting Scout exhibit, and a valuable contribution to natural history.

A Baseball Comedy of Errors

BY J. RAYMOND ELDERDICE
AUTHOR OF "A VICTORY UNFORESEEN," "HICKEY EDITS," ETC.

ILLUSTRATED BY F. RIGNEY

The account of this "wild and weird" baseball game at Bannister College is published (slightly abridged) by courtesy of Mr. Elderdice, the author, and of D. Appleton & Co., who have included this entire story, with tales of other exciting school experiences of the ever-amusing T. Haviland Hicks, Jr., in a book called "T. Haviland Hicks, Sophomore."

PERHAPS the most graphic method of chronicling that colossal conflict, the Sophomore-Freshman baseball game, would be to quote from the "write-up" of Scoop Sawyer, Baseball Editor of the *Bannister Weekly*, whose picturesque account appeared in the Commencement issue of that periodical.

Before detailing the contest by innings, the embryo journalist made a few general remarks as follows:

SENSATIONAL FINISH ON BANNISTER FIELD!
WILD AND WEIRD BASEBALL!

On Saturday afternoon that annual combination of farce-comedy, burlesque, and continuous vaudeville, more generally known to Bannister as the Sophomore-Freshmen baseball game, was perpetrated on Bannister Field by Captains Butch Brewster and Roddy Perkins, aided and abetted by twenty or more accomplices. This slaughter of the innocents and crime in the name of baseball was witnessed by a vast and enthusiastic crowd of four hundred, including Freshmen, Sophomores, Juniors, Seniors, members of the Faculty, townspeople, Marcellus Jones, the Smithson sweep, and a yellow dog, name unknown!

Promptly at 1:30 P. M. Captain Brewster's so-called nine took the field, and for fifteen minutes vainly endeavored to delude the long-suffering public into believing that they were practicing! Then Captain Perkins' aggregation followed this heinous example and illustrated the old adage, "Six of one, and half a dozen of the other."

Several of the Senior-Scientifics, equipped with powerful telescopes, made heroic efforts to discover some *real* ball players, but the total number seen could be counted on the thumbs of the left hand. The infielders could not have stopped a ball with a writ of *habeas corpus,* while an act of legislature would have been necessary to start an outfielder after a fly.

When Umpire Soc Osterhaus (as an umpire, he is a splendid checker-player) shouted, "Play ball," the Sophomores took the field, for what purpose is unknown. Don Carterson, who will never divorce Walter Johnson from his job, entered the box for 1919, with Captain Brewster playing the role of The Man in the Iron Mask. Amid vociferous rooting from extremely partisan members of the two lower classes, the annual baseball classic (?) was on.

Of Don Carterson's pitching we have to remark that his control was absolutely phenomenal. Having gathered affidavits from students of unimpeachable veracity, we can state without fear of contradiction that in the two innings he officiated, the Sophomore hurler did not hit anyone in the grandstand, or throw a single ball over the left field fence. Evidently laboring under the

delusion that he was a French soldier shooting at a German aeroplane, Carterson persisted in aiming at a point fully six feet over his catcher's head. Varying this performance, he became insanely positive that the home-plate was a target, and he registered several bull's-eyes. As a result of his obsession so many Freshmen promenaded that it soon resembled a Bowery Bread Line at midnight. After two innings of Carterson's officiating as transportation agent, Captain Brewster requested that he forget the location of the box as well as he had that of the plate, and inserted Ichabod into the mêlée as embryo Mathewson.

"They punted and drop-kicked the ball with marvelous ability."

With the Freshmen proud possessors of ten runs, as a result of countless passes and five hits off Carterson's delivery, Ichabod proceeded to take the situation in hand. Ichabod, who has boasted that he can pitch horseshoes, but never mentioned baseball, showed up as first team timber, and not a Freshman crossed the home-plate after the second inning. However, with ten runs in the Treasury, this seemed unnecessary.

In the interim, while Captain Roddy Perkins' pitching would have won the game (with the Boston Red Sox and Ty Cobb back of him), the Freshman team seemed determined to give the 1919 crowd the game as a Christmas present, or as a token of affection. In order to make it appear that there was no foul plot to this effect, while Ichabod held them scoreless after the second inning, '20 quietly handed the Sophomores a run at frequent intervals.

The entire Freshman team composed a cast, presenting a modern version of "A Comedy of Errors." The outfielders seemed to have sworn not to catch anything more than public attention, while the infielders apparently thought that they took part in a football game, for they punted and drop-kicked the ball with marvelous ability, to the great enthusiasm of all football lovers present.

However, Captain Roddy either tightened up or cut loose after the scores stood—Freshmen, 10; Sophomores, 4, in the fifth; and from then until the final frame the virgin soil of the home-plate remained untrampled by alien foot. To keep the contest from being monotonous, Umpire Soc Osterhaus seized the opportunity to demonstrate, to the satisfaction of all (except the players), that if he had to earn a living at umpiring, he would starve to death.

In the last half of the eighth inning——

Scoop Sawyer and the *Bannister Weekly* may be left astern now, for it was in the last of the eighth that the game really began, in the estimation of the joyous upper classmen. At this juncture history began to be manufactured, and the weary spirits of the spectators became enlivened, for T. Haviland Hicks, Jr., of whose presence in the Titanic struggle all hope had been lost, entered the 1919 batting order. As the score was 10 to 4 for the Freshmen, and the game nearly ended, the hilarious ecstasy of the crowd at Hicks' debut may better be imagined than described.

T. Haviland Hicks, Jr., toward the end of the eighth inning divorced himself from the 1919 dugout and navigated nonchalantly toward the grandstand. Having howled encouragement to Captain Butch Brewster's nine until his shouts resembled the vocal efforts of a bullfrog with bronchial trouble, the blithesome youth felt justified in seeking the society of the skylarking upper classmen.

As the sunny Sophomore drifted toward the stand, his lurid bathrobe flapping gro-

tesquely at his heels, he stopped suddenly, for a tremendous outburst from the spectators deafened him.

"Hello," said Hicks, as the tumult suddenly ceased, leaving a strange stillness. "Somebody got hurt? Sukey Sykes—knocked out—sliding head first into third base! I wonder——"

He hesitated. Several collegians were bearing the injured gladiator from the field, stunned, but not seriously hurt. Umpire Osterhaus, a big megaphone in hand, after a consultation with Captain Brewster and the 1919 nine, was striding importantly toward the stand to make an announcement. A moment later Hicks beheld Butch, Beef, Pudge and Ichabod dashing excitedly toward him.

"The sunny Sophomore drifted toward the stand."

"Hicks," began Captain Brewster, earnestly, "just listen——"

And he wrathfully explained that the 1919 substitutes, believing the game irrevocably lost, had rushed to the gymnasium showers so as to be sure of a bath before supper; this (this alone, indeed) made it absolutely necessary.

Butch's voice was drowned by Umpire Soc Osterhaus, who, aiming his big megaphone at the spectators, was bawling out the announcement:

"T. Haviland Hicks, Jr., now playing right field in place of Sukey Sykes. Change of batting order. Ichabod batting in Sykes' place. Hicks in Ichabod's. Hicks now at bat for '19. Two out; last half of the eighth."

Almost in a trance the paralyzed Sophomore, thus pitchforked into the game, wabbled toward the home-plate, while from the stand the enthusiastic shouts of the delighted upper classmen sounded.

" 'Ray! Ray! Ray! Hicks will save the day! Hicks! Hicks! Hicks!' "

"Aw, he couldn't hit a barn with a scatter gun."

"Let him bat with a board, Roddy."

"Don't mind them, old man," begged Butch, worried, but Hicks said, "Bah!" in his scorn of them, seized a bat, swaggered toward the stand and struck what he believed was "Home-run" Baker's camera pose. The crowd yelled, but he stilled the tumult with uplifted hand. Then the fun-loving Sophomore shouted:

"Fellow Bannisterites! The great moving-picture drama, 'Hicks, the Home-run Hero!' will now be staged. I am sorry there are not three men on bases, for *only* at such times can I knock a home-run! However, I shall proceed to win the game for old '19. My class calls on me, and——"

At this juncture angry Butch Brewster seized Hicks and dragged him to the home-plate. His knees wobbling, and the bat shaking nervously in his hands, the alarmed youth, batting girl-fashion, struck out—one, two, three; just like that!

The exuberant upper classmen, who now felt they were "getting their money's worth," roared their delight. While they were shouting big Butch Brewster, corralling Hicks, handed him a glove and in chaste English expressed his unqualified opinion of that grinning youth.

"Hicks," he said, with grim emphasis, "if *brains* were ammunition *you* wouldn't have enough to shoot a cap pistol off. Now take this glove and stand in right field and—*do your worst!*"

The Freshman half of the final inning passed without untoward incident, as Ichabod's splendid pitching held them scoreless. Out in right field T. Haviland Hicks, Jr., by the simple process of doing nothing, attracted all the attention, and Shakespeare Sawtelle, envious of Doc MacGruder's laurels, shouted a humorous parody:

"Twinkle, twinkle, b
How we wonder who
Out in right field, on the j
My, but Hicks looks like Ty C

Hicks, Junior, was the most popu youth at Bannister. By his harmless braggadocio and his funny swagger, entirely assumed, he made everybody laugh all the time and brought his punishment on himself, and it is hard to say who enjoyed the chaffing more, the students, or—Hicks!

When 1919 came to bat in the last of the ninth, with the score ten to four against the Sophomores, and Hicks, having made the last out the previous inning, no one dreamed that the festive youth would again have a chance to imitate either "Home-run" Baker or the immortal "Casey." Roddy had been pitching steady ball, giving his team-mates no opportunity to kick the game away, and not a cloud appeared on the horizon of 1920's blue sky.

Taking careful aim, James Roderick Perkins hit Beef McNaughton fairly in the back with the ball, though that elephant did not become exhausted from his efforts to get out of the way. Following this, to show his marvelous accuracy, Roddy smote Ichabod in the ribs, a difficult feat, as the lengthy youth presented a very thin sideview. Thanks to an error by Biff Pemberton, the agitated 1920 catcher, second and third base soon became occupied by the two Sophomores.

Then, with the spectators taking a mild interest, the Freshman pitcher reformed temporarily, and struck out Skeet Wigglesworth on three pitched balls! Following this Captain Butch Brewster, by way of gentle reproof, leaned against one of Roddy's fast ones for a two-bagger, scoring two runs. This feat raised the hopes

...ic interest of the ... the score to 10 to 6, ...w!

..."!" was the cry. "A garri... You can do it."

... carried away with excitement, ...ub Challoner, a rotund youth, swung ...antically at two balls so far over his head that a vaulting pole would have been more appropriate than a bat. Then he steadied down and aroused futile hopes by getting three balls, after which he showed his gratitude to Roddy Perkins by gracefully striking out. As this made two out, Butch on second, and Billy Harnsworth, a woefully weak hitter, at bat, the crowd made unmistakable evidences of departure.

However, since Billy could not hit the ball, the nervous Roddy courteously hit the Sophomore, carefully picking out the left shoulder; whereupon the second year batter promenaded to first, being greeted heartily by Butch Brewster, who had grown lonesome on second. After this event the spectators decided to wait a few minutes longer, because there were signs in the atmosphere that "things might happen!"

With two on bases, and two out, Pudge Langdon selected a choice spot back of shortstop, and dropped a beautiful Texas Leaguer thereon, which act won him generous applause from the spectators and caused a near riot among the 1919 rooters, as the bases were full! Following this illustrious example, Chub Chalmers, who had never hit a ball, drove a short single to right field, scoring Butch, and keeping the bases crowded! With the score 10 to 7 in favor of 1920, and the noise and chaos approaching the thunderous din of a combined earthquake, artillery-battle and cyclone, the tumult suddenly died, for—in the ninth, 1919 had batted around, the next hitter was—Thomas Haviland Hicks, Jr.!

"It's *all over!*" groaned Captain Butch Brewster, taking a long lead off second base. "Three runs to tie and four to win—two men out—the bases full—and Hicks at bat! *Good night!*"

To do the happy-go-lucky Hicks justice, he appeared to realize the solemnity of the occasion. It was all right to be jocular when the score was ten to five, two out and a runner on second, but now—with the bases congested, and three runs needed to tie, and himself about to make the third out, the final one of the game—it was time for serious reflection!

"Strike out, Hicks!" shouted the Freshmen. "Hicks—the Hitless Wonder! All right, Roddy—three pitched balls will do it—they'll end the game!"

Three pitched balls *did*—but in an unexpected way!

Determined not to get out on called strikes, the desperate Hicks resolved to swing wildly, in the hope of hitting the ball! With this in mind, and not hearing his team-mates' imploring shouts to "Wait him out!" the second edition of "Casey" struck madly at two balls that aviated far above his noble brow!

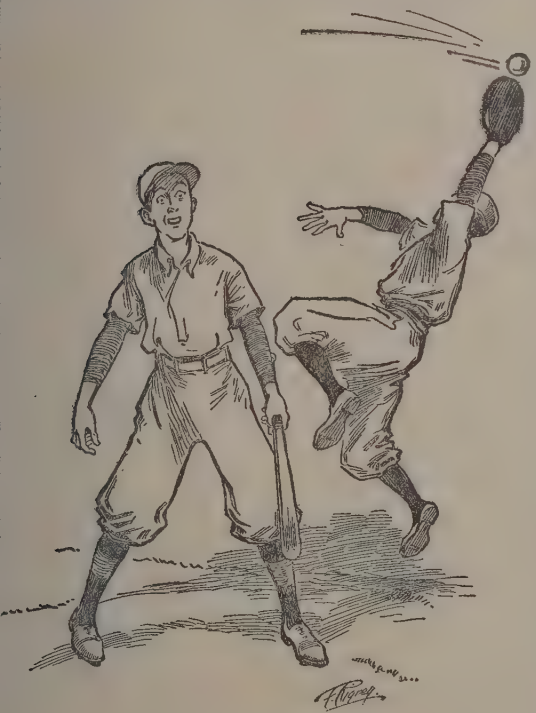
"Str-r-rike TWO!" pronounced Umpire "Soc" Osterhaus excitedly.

"It's all over but the shouting!" howled the happy Freshmen, and the upper-classmen, following a Bannister tradition, left the stand and crowded together to give their class yell for the victorious nine!

James Roderick Perkins, intensely nervous under the strain, could not have pitched the ball over the plate for a Carnegie medal; however, since Hicks would offer at anything delivered, the Freshman slowly made his wind-up for the third strike. With elaborate care he poised a

second, made a windmill of his arms, to the terror of Hicks, and—threw the ball far above Biff Pemberton's head!

With a marvelous leap the Freshman catcher succeeded in touching the ball with his big glove, converting a wild pitch into a catcher's error; the spheroid, deflected,



"'Run, Hicks—*run!*'"

rolled thirty feet to one side, and Billy Harnsworth, followed by Pudge Langdon, dashed across the plate. In the meantime the watchful Skeet Wigglesworth, who *knew* baseball, even though he could not play it, grasped a startling situation.

"Run, Hicks—*run!*" he shrieked madly, knowing why Butch and Billy had sprinted. "You struck at that ball—it's your *third* strike, and the catcher missed it! *Run—run—run!*"

It was true! The excited Hicks had taken an unmistakably healthy swing at the ball, several feet over his head, but in a daze he had stood for a second or two at the plate. Now, aroused by Skeet's shrieks, he plunged wildly toward first base! Biff Pemberton, having retrieved the ball, did some quick thinking—two runs had scored, but the Sophomores still needed one to tie, and two were out—if he caught the tardy Hicks at first the Freshmen would win the game!

With this in mind, and actuated by good motives, Biff hurled the ball, but it went out into right field, to the surprise of the fielder, who stared at it in bewilderment! While this took place, Chum Chalmers, a fair sprinter, turned third base and dashed at top speed for home-plate with the tying run amid deafening cheers! When the right-fielder finally picked up the ball the speedy Sophomore was nearing the plate, and a throw even from Ty Cobb would have been futile—therefore he made a "bonehead play" and hurled it toward an angry catcher!

"Hicks, Hicks, Hicks!" Every one, it seemed, except the dazed Freshmen, shouted at the debonair youth, who was industriously striving to sprint around the bases, studiously touching each one. "Go it, Hicks—*home-run,* old man!"

As the hard-working Hicks neared third base the frantic Freshman catcher, in striving to pick up the ball as it rolled to him, dropped it again! Finally clutching it, he threw it to the third-baseman—and it was promptly muffed. The ball bounded on toward the left field fence at a slow pace, and Butch Brewster, who had run down to coach, took a desperate chance and yelled:

"Home—Hicks! Run, and *slide*—go *home!"*

The frenzied third-baseman, in starting

after the ball, caught his toe in the bag and did a beautiful Annette Kellerman dive on *terra firma!* By the time he recovered his equilibrium and the ball Hicks, even with his speed materially reduced because of fatigue, was about to be received with tremendous cheers and open arms at the home-plate! Determined to interrupt and foil this Home-coming delegation of 1919 enthusiasts, he went Biff Pemberton's wild throw to first base one better, and——

The spheroid sailed high over the catcher's head, striking in the wire backstop, which extended to the right of the home-plate. Amid an uproar that no event in history can duplicate, T. Haviland Hicks, Jr., having actually scored a home-run, and added four scores to the 1919 column, thus winning the great Sophomore-Freshman game—*on a strike out,* literally staggered across the plate and collapsed.

Several minutes later, when the shouting and the tumult died, and the hilariously happy rooters of old 1919 bore the triumphant players gymnasiumward, while the thrilled spectators still vociferated their unparalleled joy, T. Haviland Hicks, Jr., borne on Bus Norton's broad shoulders, looked across several heads at Captain Butch Brewster, being transported in similar fashion.

"Just leave it to me, Butch," the sunny Sophomore chortled joyously, with that inevitable Cheshire cat grin on his classic countenance. "I said I would win the game for old '19! And, behold, I have kept my word, for——"

"Yes——" jeered Butch Brewster, though he could not conceal his happiness sufficiently to crush the exuberant Hicks with the proper scorn. "A home-run—on a strike-out! Bah—you are *some* batter, you are!"

"'Just leave it to me, Butch, the sunny Sophomore chortled."

How to Make a Trek Cart

BY ALFRED H. LOEB

ASSISTANT SCOUTMASTER, TROOP 95, PHILADELPHIA, PA.

HAVE you a trek cart? Every troop ought to have one, and every troop can have one. All you've got to do is to make it. Our troop made one and we like it so well we are glad to pass the information on for the benefit of other troops which have not yet added a trek cart to their regular equipment.

One of the best things about our cart is the fun we had making it. Every bolt and nut and board and screw is an old friend, and every Scout in the troop knows what every part of the wagon is for and just how it works, for we put them together ourselves.

Judging from our own experience, we believe that a troop can easily build a trek cart for less than fifteen dollars. The most expensive parts are the wheels and springs, but, in many cases, troops will be able to obtain these articles second-hand, and thus save considerable money.

To help you in making a cart for your troop, here are the details of the one which we built, every bit of which was made by the boys themselves, with the exception of the wheels and the springs.

This is a two-wheeled cart, and, when fully equipped, has ladders lashed to each side and a Baker tent for the waterproof covering. A rope attached to a hook on each wheel and a long shaft make it easy to pull a heavy load of camp equipment.

Of course, it is essentially a transport wagon, but when we reach camp, by removing all the extra equipment, we have a cart which is ideal for hauling firewood and provisions, or which can be used as an ambulance, if necessary.

By removing the body from the wheels and turning it upside down, we have a table ready for use. The ladders may be used for scaling walls, climbing trees to study birds' nests or for reconnoitering purposes, and when lashed to the shaft of the cart the whole thing makes an efficient bridge to cross an eight-foot stream.

The whole cart can be easily and quickly assembled and taken apart, so that not only is it convenient to transport by rail, but, when desirable, it can be stored away without taking up much space.

Our headquarters is located in the city, far away from the open country, so that on the car ride necessary before starting to hike, each scout can easily care for his assigned part of the cart equipment.

The best place to build a trek cart is in a shop where you can have the use of whatever tools you will need. Nearly every troop has among its members some boy who has a well-equipped work shop either in the basement of his home or out in the barn, and this boy will be glad to have the troop build the cart there.

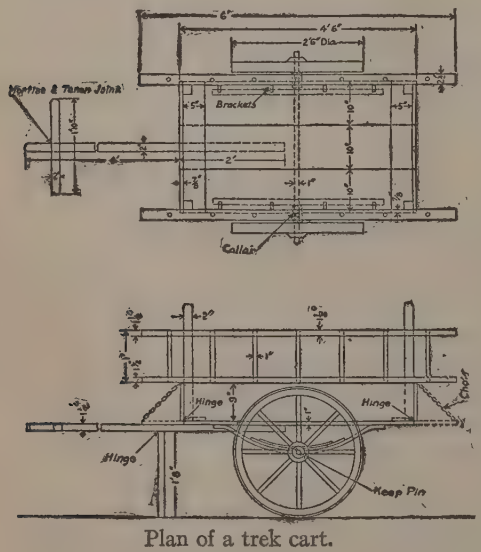
When you have decided where the cart is to be built, the next thing to do is to collect all the materials which you will need in constructing it. Probably there is some one Scout in the troop who has had more carpenter experience than any other member and who knows just how to go about such a job. It would be a good idea to elect this boy "boss" and have him direct the work.

How to Make a Trek Cart

When you have your materials all collected and your "boss" elected, you will be ready to begin work. But you will need a plan to go by—carpenters must have plans before they can build houses and Scouts must have plans before they can build trek carts. Detailed diagrams of the cart which our troop built will be found below. By comparing these diagrams with the following specifications, you should have no trouble in building your hike wagon.

The Specifications

Here are the specifications of our cart:



Plan of a trek cart.

The size of the body is 2 ft. 6 in. by 4 ft. 6 in., but when the board ends are let down, the cart becomes 1½ ft. longer, or 6 ft. in all. The other dimensions you can obtain from the plans. The base of the body is composed of three 10-inch boards fastened together at each end by a cross-board 5 in. in width, and several bolts. L-shaped brackets and screws hold the sides rigidly to the base of the body while the ends are hinged to the base and provided with chains, so that they can be held at any convenient slope.

The body of the cart is mounted on leaf springs and the wheels are fastened to a 1-inch axle by means of washers and keep pins. The shaft is bolted under the body with three 1-inch bolts with "butterfly nuts," and is, therefore, easily detachable. Supports for the canvas covers are inserted into slots cut in the 5-inch cross-boards, and are held firm by being screwed to the side-boards. These supports also serve as legs when the body is used as a table. The ladders may be lashed to these supports or fastened to the sides or slung under the wagon. An extra leg hinged to the shaft supports the cart when not in motion. The wheels have extra wide rims which prevent the cart from sinking in the mud.

The wagon is constructed of ash and is painted with the city's colors, blue on the outside of the body and yellow on the inside. On the sides we have placed the words, "Boy Scouts, Troop 95," and on the back the word, "Philadelphia."

Among the advantages of this cart are the small number of tools required—only a screw-driver and a small wrench being needed for assembling and taking it apart—the ease with which it may be carried, the simplicity of construction, and its durability. It will safely bear 600 pounds. If bolts with "butterfly nuts" are used throughout, no tools are required.

You can see by the photographs the many uses our scouts make of their cart. If you will follow these specifications carefully, you will be surprised to find how easy it is to make a trek cart, and after you have used it, and have found out how much work it saves, you will wonder why you didn't build one long ago.

The Scout's Cave

The "Cave Scout" is an anonymous writer who is a member of the National Headquarters staff of the Boy Scouts of America. His specialty is helping Scouts to solve the many puzzling personal and troop problems which arise in Scout work. He does this by answering the questions which come to him from Scouts. Most of these questions are answered by letter, but some, which deal with problems of general interest, are answered in a special department in "Boys' Life," the Boy Scouts' magazine.

BY THE CAVE SCOUT

THE question hole is chock full this month. Let's see what we can find. Here's a good letter from Scout Harold Barker, of South Royalton, Vermont. Barker's troop is certainly in a bad pickle, but lots of other troops are, or have been, in the same kind of trouble, so perhaps it will help us all to consider this case.

Here's the letter:

DEAR MR. CAVE SCOUT:

I have read with pleasure your articles in BOYS' LIFE, that splendid magazine for boys, and would like to have your advice on one question.

A troop of Scouts was organized here in South Royalton some four years ago. At that time it aroused a great deal of enthusiasm. It grew quite rapidly, but I am sorry to say, never could boast of over fifteen members. But South Royalton is a small place. The high school here has less than seventy members, less than half of whom are boys of Scout age. But unfortunately the "members present" at each meeting began to be less. And now, to cap the climax, no meetings have been held for over six months.

Another difficulty is the lack of Scoutmasters. We have tried two—all we could induce to aid us—but both had too much other work to attend to. They could not put sufficient time into the Scout work.

Our patience is almost exhausted. It is utterly impossible to secure an efficient man to serve as Scoutmaster, and only two or three of the boys are still enthusiastic over the movement. We have tried our best to keep up the interest, but in vain. About nine out of every ten are, in fact, "dead."

Two or three, myself included, are still loyal, but we live two or three miles from South Royalton, and four or five miles separate our homes. We do not wish to give up hope of becoming an aid to the Scout movement, but what are we to do?

The nearest troops are from ten to twenty-five miles distant.

Please give me your advice as to what it is best to do.

Yours very truly,
(Signed) HAROLD C. BARKER,
R. F. D. No. 1. South Royalton, Vt.

H'm, that certainly is a tough proposition, isn't it? It seems to me this is a mighty good chance for the Scout who will stick—*the Scout who will stick.* Sounds kind of musical, doesn't it? Maybe there's a poem in it.

This bally poem got stuck on itself and dolled itself all up in a fancy border, but you'll find it on the opposite page.

Now then, Scout Barker, you and your friends who are still in the game are mighty good examples of "Scouts who will stick." All the rest of us Scouts ought to be proud of you and the brave struggle you have made to keep the Scout

movement alive in your town. Four years of discouragement is "some" sticking!

You know, sometimes the Cave Scout feels sorry for those fellows to whom everything comes almost without effort. They never have the satisfaction that comes from tackling a hard job and getting away with it. But there is something even more important that these fellows miss. There is no training in the world more valuable than learning how to face difficulties and disappointments and win out in spite of them. When a boy has learned to do this, he is ready for almost any emergency that life can bring.

Our history is full of stories of men who won because they had the courage to stick. We all know the story of John Paul Jones, that old bulldog sea fighter who said, when his ship was sinking and he was asked to surrender, "We've only begun to fight!" And we know how he sailed right in and licked the tar out of the enemy. We know how Washington stuck through that awful winter at Valley Forge, and how "Abe" Lincoln fought his way from rail-splitter to President because he knew how to stick. We know—but here is a more recent illustration:

A few weeks ago Thomas A. Edison's plant at Orange, N. J., was destroyed by fire with a loss of $5,000,000. This plant represented years of hard work and planning, and yet, as Mr. Edison stood watching the flames, he had nothing to say about hard luck. What he *did* say was: "I'm pretty well burned out just now, boys, but I'll start all over again tomorrow. There'll be some rapid mobilizing here when the débris cools off and is cleared away. I'll go right to work to build the plant over again. It's just a temporary setback; don't forget that."

That is the spirit which has made Thomas A. Edison the greatest inventor the world ever knew.

And so the Cave Scout congratulates you fellows at South Royalton—and all other Scouts who are lucky enough to have some good husky difficulties to overcome—on your fine opportunity. You'll be better men for it when you grow up.

There is one big danger about sticking, however, and that is the danger of sticking to the wrong thing. Some fellows stick to cigarettes and lose their health; others stick to lying and cheating and lose their honor and the respect of their friends. Before you begin a thing be sure it is worth sticking to. No boy ever lost either his health or his honor by sticking to the Scout Law, so you are safe enough there.

So the best advice I can give to Scout Barker and other Scouts in the same difficulty is to *stick to it.* The mere act of sticking will be a big help to you, so you are sure to gain *something* anyway, and the chances are about ten to one that if you fight hard enough you can make things come your way.

Here are some hints that will help you to fight. Talk Scouting to these disinterested boys every chance you get. Never miss an opportunity to tell them of the big times other Scouts are having. Maybe you can re-awaken their interest by arranging some special activity, such as a hundred-mile hike for the coming season, or a competition of Scout activities with one of those troops you mention which are ten or twenty miles away.

As for the Scoutmaster, get enough boys to make at least one patrol, show your man you mean business and keep at him until he consents to help you out. Very few men can resist the persistent entreaties of a group of boys who are in

dead earnest. Send the name of your prospective Scoutmaster to National Headquarters with the request that Scout literature be sent to him. Keep after him, boys, and *you'll get him.* "STICK!"

But after you get him, you must not "soldier" on the job. It is hard for a Scoutmaster to retain an interest in his Scouts if they go at their work in a half-hearted way.

Get some definite object in mind so that you will know exactly what you are working for, then grit your teeth and say: "This thing is worth doing, and by George, I'm going to stay with it until it's done!"

Where Are You Going to Draw the Line on Good Turns?

In a town in the Middle West lives an elderly man who has plenty of money. One reason he has plenty of money is because he never lets go of a nickel. He is just plain *stingy.* Money sticks to him like sandburrs to a pup. He lives in a corner house with a long stretch of sidewalk on both sides. Right next door to him lives Scout—but I guess we hadn't better tell his name.

One night last winter there came up a heavy snowstorm and the sidewalk was covered a foot deep. The morning after the snowstorm Scout—we'll call him Tom—was shoveling snow from his own sidewalk when this man came out of the house and said, "Tommy, don't you want to shovel off my sidewalk?"

"You bet," said Tommy. So he started to work and shoveled snow for nearly half a day until he had a blister on his thumb and his back squeaked like a rusty hinge every time he straightened up. But finally he finished the job and went up to the front door and rang the bell.

The man came to the door. "Are you through, Tommy?" he said. "Thank you very much. You've certainly done your Good Turn today."

"But," said Tommy, "aren't you going to pay me? Gee, it ought to be worth a quarter, anyway."

"Why, Tommy," said the man, "I always thought Scouts didn't accept pay for doing Good Turns."

Tommy was certainly puzzled for a minute, but he finally decided that it would not be polite to argue the matter, so he stammered, rather weakly, "I—I—guess I had forgotten that." He gave a Scout smile and went away.

But you can bet your bottom dollar that Tommy was nowhere to be seen after the next snowstorm! And just between friends here, the Cave Scout doesn't blame him a bit. If I were Tommy I'd let that old miser get covered with snow clear up to his ears before I'd stick a shovel into a snowbank to dig him out.

And yet, just suppose, for instance, that this old man wouldn't shovel off the snow himself, and wouldn't hire anybody to do it, and there was no law to make him do it, and the sidewalk became so slippery that people who traveled that way were in danger of falling and breaking their legs. In that case wouldn't a good Scout clean off the walk and do a Good Turn—not for the old man (he could leave the path from the sidewalk to the house uncleaned and let him take chances on breaking his stingy old neck), but for the whole neighborhood? That *would* make a difference, wouldn't it?

But you must not get the impression that there are many people who are so mean as to take advantage of a fellow in that way. The vast majority of folks are

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But you must not get the impression that there are many people who are so mean as to take advantage of a fellow in that way. The vast majority of folks are

fair and would not allow a Scout to do an unreasonable amount of work for them without pay. In fact, many of them offer Scouts money for doing Good Turns. But, of course, no real Scout accepts it.

What's that, you ask? "Where are you going to draw the line?"

Well, now you *have* asked a hard one. It is no easy job to tell how much work a Scout should do for a Good Turn. It depends entirely on circumstances. But in cases where there is a *real need* for your services, the Cave Scout would say that it is your duty to pitch in and work. There are occasions, such as the great fire disaster at Salem, Massachusetts; the Star Spangled Banner celebration at Baltimore, the G. A. R. Encampment at Detroit and the recent floods near Kansas City, when a Scout should feel willing to work a whole day or a whole week without pay.

But it is not only at such big affairs that it is a Scout's duty to work. If this same old man I've told you about were too feeble to clean off his walk and were too poor to hire a man to do so, it would surely be Tommy's duty to shovel that snow, don't you think so? Any Scout who keeps his eyes open can find plenty of places where his services are badly needed, and of course in these cases it is his duty to do his Good Turns. Old people, crippled people, and sick people very often need help, and Scouts should keep track of them and be ready to do Good Turns where their help is needed.

I take it for granted, of course, that you Scouts are taking advantage of the hundreds of little opportunities that come to you for being of service—answering questions for strangers, giving up your seats in the cars to ladies and old people, running on short errands, sharpening pencils and erasing blackboards for your teachers, helping your mothers at home, etc.

What's that? "Suppose I don't want to do my Good Turn?" That's easy. Don't do it.

For goodness sake, Scouts, don't go around doing your Good Turns with a face as long as a sleepless night! If you don't enjoy doing your Good Turns—don't do them. I don't want any Scout doing a Good Turn for me unless he gets as much fun out of doing it as I do out of having it done. You see, Scouts, the spirit of the thing is important. Did any of you Scouts have an idea that this Good Turn business is a *task?* If so, you don't know what Scouting is. Doing Good Turns is about the best fun Scouts have. If you don't get fun out of them, there's something wrong with you somewhere.

The Cave Scout Discusses the Ideal Scout—Are You One?

Hello! here's a letter from Scout Frank Parater, of Richmond, Va.

Dear Mr. Cave Dweller:

Your talk on good turns was dandy. It is in the same class with Dan Beard's and Chief Scout Seton's departments, and that's going some. [Aw, shucks, Frank; don't make me blush right here before the whole crowd!] I should think all the Scouts would rush to the Cave and have their troubles solved for them.

Here are a few questions I would like to have answered:

1. In what does an ideal Scout consist? What is one, his qualities, etc.?
2. How is the best way to run a hike, *i. e.,* program, discipline, campfire, food?
3. How can you stir up interest in advancement?
4. What are——

Cave Scout Discusses the Ideal Scout

Hey, Frank, *stop!* For the love of Mike! The Cave Scout could write a book on those three questions, and you're still asking more! I can't write a book here, so I'll just tackle the first question and let the rest go.

"In what does an ideal Scout consist? What is one, his qualities, etc.?"

Well, just between you and me and the pump-handle, Scouts, "there ain't no such animal." All of us are good Scouts in some respects and bum Scouts in others. None of us are good Scouts in *every* respect—even if our mothers do think so. We all have some strong points and some weak ones.

If there were such a thing as an ideal Scout I'd like to stand him up here in front of you fellows and show him off. But since there isn't any such Scout, I guess we'll have to make one.

First, I want a well-built fellow, one with a deep chest and long, firm muscles, one who is strong, quick and graceful, a fellow with sound teeth, clear eyes and no cigarette stains on his fingers. All right, Jones, I guess you'll do.

Now I want a fellow who is always neat and orderly, whose hair is always brushed, whose teeth are always in perfect order, whose shoes are always shined, and who is never late to meetings. I want a Scout who is able to do things in a systematic and orderly way. Scout Burnett, you say? All right, Burnett, step up here.

And now I want a Scout who has plenty of "pep," a Scout who gets things done because of his abundant energy and enthusiasm, a Scout who goes after merit badges like a hungry turkey after grasshoppers. Scout Tousley? Step up here, Touser.

Now give me a Scout who is always cheerful, a Scout who thinks it's a joke when his tent blows down at 3 A. M. and his blankets get soaked with rain; one of those Scouts who makes the most of every situation, who instead of saying, "what's the use?" when something goes wrong, starts right in to "save the pieces"—a Scout who can't be downed by discouragement. All right, Scout Parkhurst, you'll do.

Next, I want a kind Scout, one who has a great, big heart in him, one who always considers the feelings of others and who does his good turns almost instinctively. Such a Scout can't help being courteous, for true courtesy is nothing but thoughtfulness for the feelings and respect for the rights of others. Who is the kindest Scout you know? Scout Lincoln, you say? All right, Scout Lincoln, step up.

And now there is one more kind of Scout I want—a Scout with a good "bean," one who grasps the meaning and significance of a situation quickly, one who thinks rapidly and reasons accurately, a Scout with an alert, keen mind. Scout Calhoun, over there, just about fills the bill.

Now, then, let's see what we've got. Here's "Husky" Jones and "Orderly" Burnett and "Peppy" Tousley and "Cheerful" Parkhurst and "Courteous" Lincoln and "Brainy" Calhoun. Let's take Burnett's neatness, Tousley's "pep," Parkhurst's courtesy and Calhoun's brains, and dump them all into Jones' fine physique.

That will make "some" Scout, won't it? But he isn't an *ideal* Scout yet. He is something like a new automobile, strong, neat, able to do things, and full of gasoline or "pep." But that automobile won't *go* until a spark sets the motor running. And so this Scout we've made won't be an *ideal* Scout until a spark sets him going. This spark is *Scout spirit.*

Scout spirit cannot be analyzed and described as these other qualities can, but it is the most essential one of them all.

I can't tell you what this spirit *is,* but I can tell you some things it *does.* It makes a fellow proud of the fact that he's a Scout; it makes him anxious to make the right kind of man of himself and eager to be of service to others. Spirit is the thing that helps a fellow to get *deep enjoyment* out of his Scout work instead of simply "having a good time."

Those of you Scouts who have this spirit will know what I mean, but those of you who haven't got it may think the Cave Scout is "bughouse."

But those of you who haven't got the true Scout spirit will catch it sure as shootin' if you do your level best to live up to the Scout Law.

And now we mustn't feel discouraged because we can't ever become *ideal* Scouts. The thing for us to do is to keep the qualities of an ideal Scout constantly in mind and work like sixty to come as near to being ideal Scouts as we can. If we do that nobody will have any kick coming—not even ourselves.

That looks like a reasonable program to the Cave Scout. What do you fellows think about it?

Time and the Ship's Bell

Time on board ship is divided into periods of four hours each, making six whole watches during the twenty-four hours; with the exception that one of these periods, namely, from 4 to 8 p. m., is divided into two half-watches of two hours each—called dog-watches—of from 4 to 6 and from 6 to 8.

During each of these watches,—including the period from 4 to 8 p. m.,—the ship's bell is rung every half-hour. For instance, at half-past 8 in the morning it is struck once, and the time is called "one bell;" at 9 o'clock it is struck twice, and the time is called "two bells," and so on until noon, when it is struck eight times and the time is called "eight bells." Thus "one bell" occurs six times during the twenty-four hours, namely, at half-past 8 in the morning; at half-past 12 in the afternoon; at half-past 4 in the afternoon; at half-past 8 in the evening; at half-past 12 at night; and at half-past 4 in the morning.

The reason why the period from 4 to 8 is divided into two watches is because, when the starboard and port watches alternate in the work of the ship throughout the twenty-four hours, the same men would always be at work at the same hour of the day and night if the number of the watch periods were even. This is prevented by making an odd number by the dog-watches.

The strokes of the bell are made in couples. Thus: —— —— is four bells; —— —— — is five bells, etc.—*From Cruising for Sea Scouts.*

Peter and the Game of War

A Southern Boy's Night Adventure Which Played a Surprisingly Important Part in a Big Battle

BY RALPH D. PAINE
AUTHOR OF "COLLEGE YEARS."

THE regulars and the militia from many States had been mobilized on the old battlefield of Manassas, or Bull Run, to play the game of war in what are called "army maneuvers."

The turn-pikes, the green fields and the rolling hills swarmed with soldiers in blue and brown. Long trains of white-topped wagons, clattering troops of cavalry, and plodding infantry regiments in yellow clouds of dust made such a stir in this part of Virginia as the sleepy country-side had not known since the grim days of real warfare forty-odd years ago.

A gray-bearded farmer turned his horse off the Warrenton Pike to let a rumbling battery pass, and sat erect in the saddle while he overlooked the distant camps. A smile lighted his wrinkled face as he raised his slouch hat to salute the tired gunners in khaki, and he shouted to one of the officers:

"These yere manoovers kinder riles up my old blood. I come through that Gap over yonder with Stonewall Jackson in '62, and we fit the second battle of Manassas along these same yere pikes. And you-all wears the old butternut, I see, to tell your army apart from t'other one, and young General Grant's army over there wears the old Yankee blue. It makes us old Confeds feel like yellin' for your side."

The artillery captain rode across the highway to shake the veteran's hand and said:

"We are all one army and one people now. My father was here under Pope, but now I am wearing a butternut shirt, as you say, and tomorrow our army under General Franklin Bell begins the two days' fight against the army in blue. It looks like real war, doesn't it?"

The old man chuckled as he moved on with the farewell words:

"Here's hopin' you lick the boys in blue out of their boots, just for old times sake."

The white horse had jogged only a few steps when a barefooted boy jumped down from the snake-fence and scurried to the veteran's side. His freckled face was eager with excited interest and his blue eyes danced as he called breathlessly:

"Howdy, Uncle Nat! I'm just goin' down the road a piece to see the sojers. Tell Ma I'll be home directly. Is they-all goin' to fight tomorrow, honest? I reckoned it was only make-believe war."

Uncle Nat laughed and flicked the boy's ear with a switch as he said:

"No, Peter, it's a blank ca'tridge campaign this time. These yere twenty thousand men will march and charge and hooray and shoot powder so they'll know what to do when a genuine war comes along, which we pray won't ever happen again. You'd better stay close to home, or you'll be trompled by these yere rarin', prancin' hoss-sojers."

Uncle Nat rode on and thought of the days when as a lad not much bigger than this thirteen-year-old Peter he had left the farm in this same valley to shoulder a musket with Jackson's tattered regiments in butternut and gray. And as Peter Tyler pattered up the pike in pursuit of the battery, his tow-head was full of the stories he had heard from Uncle Nat of those great days so very long ago.

To the boy these modern "army maneuvers" seemed so real that he was not quite convinced that war-times had not come again. If this was all a game, he reflected, why did one army wear the uniforms of what Uncle Nat called "The Lost Cause" and why was that other mighty army over at Manassas clothed in blue and led by a general named Grant who looked exactly like the pictures of the terrible Yankee leader of the Civil War?

Peter halted to examine a stone bruise on his heel, then limped from the rocky road and sat in the grass to ease his foot. Before he could again strike up his dog-trot, the cannon and the brave riders in brown went rattling over the brow of the hill, and he could hear them pounding down the other side at a gait so rapid that he could not hope to overtake them.

He was sorry, but decided to wait for more soldiers. Soon his patience was rewarded.

Toward him came a squadron of cavalry, picked troopers of the regular service who had seen much hard fighting in the Philippines. This make-believe campaign was no more than a holiday for them. The dust-covered butts of their carbines sticking from the leather "boots," the jingling sabers, and the worn holsters at their saddles made them look grimly like business.

As the straight, sun-burned men swung past, riding easily, Peter felt a new thrill of excitement, and his joy was complete when the buglers blew a call that made shivers run up and down his back. But he could not overlook the fact that these splendid soldiers wore blue shirts, and he would not let them think him a coward. So he doubled his fist at the elderly major in command and shouted at the top of his shrill voice:

"Hello, Gineral Grant's Yanks. I hope you-all get licked tomorrow."

The major laughed and a mischievous lieutenant sang out:

"Run home, little Johnny Reb, or the cows'll bite you."

This was an insult, and Peter hurled back taunts which were lost in the noise of hundreds of hoof-beats.

He turned to trudge home, angry at the Yankee "hoss-sojers," but presently his woe was forgotten, for a band burst into music behind him.

This tune was "Dixie" and he stood entranced. To the stirring strains marched long lines of men in brown. A brigade of General Bell's army was tramping back to the tents after a long practice march and the columns came swinging into view until Peter thought there could be no end of them. Yes, they must look just like Stonewall Jackson's men as Uncle Nat had so often described it.

Peter forgot his stone bruise and trotted beside the pleasant young men who al-

lowed him to pat their rifles, but they were striding at a gait which made him limp painfully and he dropped slowly to the rear. A string of ambulances trailed behind the infantry, and a surgeon sitting in one of them noticed the weary, but enthusiastic follower.

"Jump up here and ride," he cordially

"His blood was fired by Uncle Nat's stories."

exclaimed. "You seem to be going our way."

Pride swelled Peter's chest until his one suspender was strained to the breaking point. He belonged to the army now. This was really and truly the wagon in which the wounded were carried from the battlefield. But what he was most anxious to know was how he might see the fighting on the morrow. To his excited questions the surgeon made answer:

"Rockets will be sent up at midnight, from General Corbin's camp half-way between the two armies. That will be the signal for the troops to get under way. It will be too early for the small boys to be out of bed, but if you are up and along the Carpathin Road soon after daylight you'll be in plenty of time to see the infantry taking position."

Peter politely thanked him, but he had no intention of waiting for daylight. When he ran into the house for supper he was ready to do anything in the world to help General Bell's army win. The "Yankees had sassed him" while the soldiers in brown had treated him like a man and given him a ride in an "amberlance." In the evening his blood was fired by Uncle Nat's stories, which had to be told all over again on the eve of this mimic battle of Manassas. Peter sat in the chimney corner and had little to say, but a wonderful plan buzzed in his head.

He crawled into bed, but his eyes refused to close. When he could fidget no longer, he tip-toed down the back stairs, lighted a candle in the kitchen, and looked at the old clock.

It was after eleven.

He stole into the yard and flitted through the barn doorway like a shadow. The bay colt whinnied as Peter dragged Uncle Nat's saddle from the peg.

He let down the bars and led the colt up the lane and into the back pasture as a round-about route to the turnpike. The handsome filly trembled as she felt the coolness and mystery of the darkness, and reared as Peter jumped astride her from the top rail of the fence.

He slapped her between the ears with his straw hat, dug his heels into her flanks, and she lunged away in a headstrong gallop.

Peter had decided to ride to the half-

way point between the two camps, about four miles from his home, and watch the signal rockets soar against the midnight sky. Then he could follow whatever soldiers happened to cross his path.

He held the colt well in hand until he was within half a mile of General Corbin's headquarters. Then he dismounted and tied her to a post, throwing himself down in the grass to wait for the war to begin. This night ride had made the adventure seem less like make-believe than ever. He could imagine the long lines of rifles spitting flame from the shadowy fences, the regiments lying in the roadside ditches to meet a bayonet charge. The rustle of a leaf made him jump, and when the colt stepped on a twig the sharp report made Peter think he had been shot at.

After what seemed a long, long time a golden rocket spangled the clouds with a burst of stars. The boy scrambled into the saddle and almost instantly he heard the rattle of iron-shod hoofs echo far down the sleeping road. A few minutes later a black mass of cavalry swept past with the rush of a tornado. The bay colt pawed the air while Peter clung to her neck. Then she put her head down and bolted madly in the opposite direction from the horsemen, who had frightened her out of her wits.

Straight toward Manassas flew the crazy filly, running as smoothly as a swallow skids, while Peter sawed in vain on the light snaffle bit. He knew that he was running straight into the camp of General Fred. Grant's army, if the colt did not break her neck in the meantime, and this thought added humiliation to his fears. To be captured by the "Yanks" would be a bitter misfortune, indeed.

Just then his quick ear caught a far away tramp, tramp, of moving men. He led the colt into the black shadow of a thicket and waited where a wood-road, seldom used, branched off from the turnpike and led in the direction of Thoroughfare Gap. Pressing his hand over the colt's nose, he tried to soothe and quiet her as a dusky column of infantry wheeled from the turn-pike into the old, forgotten road. He could hear the clink of scabbards, the squeak of leather, and the steady shuffle of one regiment after another. He guessed there must be several thousands of these stealthy marchers, and they were in motion hours before daylight. They were taking this abandoned road through the fields and woods and pastures in order to carry out some kind of a surprise.

These troops were coming from the direction of the blue army's camp and advancing against the forces in khaki whose uniforms had reminded Uncle Nat of Stonewall Jackson's brigades. It was Peter's plain duty to play the scout and try to let General Bell know what was in the wind. It would never do to let the "Johnny Rebs" suffer a reverse at the very outset of the campaign.

Afraid of being discovered, Peter lay flat and held his breath, but, alas, a blade of grass tickled his nose and he could not hold back the sneeze that sounded like a young explosion. A soldier leaped from the passing ranks, caught a glimpse of Peter's cotton shirt and dived after him. Peter was scuttling into the undergrowth like a panic-stricken rabbit, but the soldier's legs were long and in a few strides he clutched the boy by one leg. Peter squirmed, but his captor carelessly tucked him under one arm and carried him back to the road, where he set him down and reported to his commanding officer.

"I've caught a spy, sir, hiding in the bushes. Shall we hold a drumhead court-martial and hang him to the nearest tree?"

The officer surveyed the trembling prisoner by the light of a match and grinned as he said:

"He is big enough to carry information to the enemy, and the natives seem to favor the brown army. Well, my son, why aren't you in bed?"

"I'm not a spy," indignantly blurted Peter. "You sojers sassed me and called me a little Johnny Reb. You bet I am. An' I'm out scoutin', so there. You can't scare *me*."

Peter was rapidly getting his wits together. The soldier who had captured him was holding him fast by the collar, but the shirt was old and thin. The colt was hidden no more than twenty-five yards away. The chance was worth taking. The officer lighted another match and glanced at his watch, impatiently exclaiming:

"We are blocking the road. Bring the boy along for safekeeping. We can't afford to let him tell anyone where we are."

Peter ducked and wrenched himself away from the hand at the back of his neck. The shirt ripped and split and the boy darted away like a streak. A dozen soldiers yelled and put after him, but he had caught them napping. His bare feet fairly twinkled as he scudded into the turnpike and made for the shadowy outline of the colt. A jerk on the rein that tied her to a post and the knot was freed. He flew into the saddle as if he had wings. The restless filly was eager for more of the wild night-running. Before the nearest pursuer could lunge at a stirrup she was yanked around and headed straight away for Thoroughfare Gap.

"You must scoot for your life, Mollie," Peter shouted in her ear. "We can't allow them Yanks to beat Gineral Bell's army."

He flogged her with his heels and the night-wind whistled past with the speed of her flight. In the midst of this helter-skelter dash, Peter heard horsemen right ahead of him. There was no stopping the colt. She went by them like an arrow. A squad of troopers wheeled and dashed after her, but they were soon distanced. Shots rang out and, turning his head, Peter saw little streams of flame spatter the darkness. He did not stop to think that these were only blank cartridges, and he ducked, expecting the buzz of bullets.

Mollie was running toward home, and when she came to the familiar lane she tried to turn in, but Peter held her straight and with an angry plunge she settled into the last stretch of the journey. Soon he heard the approach of more troops. They must not stop him, even to ask questions. He remembered that the fence along this roadside was four rails high, with a smooth stretch of meadow beyond. Letting the filly go as close as he dared to the oncoming troops, he swung her with all his strength to one side of the pike, pulled her down to an easy canter, and sent her straight at the fence, while he shouted the "rebel yell" as he had learned it from Uncle Nat.

The filly laid back her ears and rose like a bird, while Peter felt as if he had been shot out of a gun. Then the saddle seemed to drop swiftly from under him and he wildly pawed the air. Before he could realize what had happened he was digging his freckled nose into the turf. When the dazed young scout staggered to his feet he could hear the wise colt scampering back to her home and stall.

However, Peter's purpose had not been knocked out of him. He rubbed his arms and legs, wiped his bleeding nose, and concluded that no bones were broken. Then he hobbled along the inside of the fence until the road seemed clear of soldiers and slowly made his way toward the goal.

Half an hour later he was hailed by a

sentry in front of General Bell's headquarters. The Irish regular smiled when, by the glow of a lantern, he surveyed the battered, breathless lad who demanded to see the commander of "our army." He gently led Peter by the ear to a tent in front of which many officers were standing, all booted and spurred.

" 'Tis an infant scout," reported the sentry. "He has important information regardin' th' movemints of th' inimy. If I don't conduct him into th' prisince of th' gineral he'll be eatin' me up, he is that warlike."

Peter applied what was left of his shirt-sleeve to that damaged nose of his and proudly reflected that his name should lead the list of the wounded. He summoned his last bit of courage as the general looked up from a table covered with maps and reports.

"Please, sir," gasped Peter, "I'm a Johnny Reb, same as you-all, and we want to lick the Yanks. Well, I was on the bay colt and she ran away with me and took me clean over among them Gineral Grant sojers. I saw 'em marchin', thousands of 'em, up the old wood-road by old man Jenks' place, and they're comin' to gobble you up. So I come a-tearin' back to tell you, and the colt throwed me over a fence, but I hope I didn't get here too late."

The general sat Peter upon his knee while he consulted with his staff officers. They bent over the maps on the table and found the wood-road traced in faint outline. It was marked as overgrown and impassable for large bodies of troops. Peter knew better. The map was at fault. The general had failed to take this road into account. By making use of it, and moving soon after midnight, the enemy might be able to execute an important turning movement and win the first point in the two days' game of war.

"The boy is right," exclaimed a colonel. "If he actually saw a strong force in that old road, then we can't move too soon to checkmate it. We shall have to take the youngster's word for it, because our scouts will not report for another hour or two. And every minute counts."

Peter's head had fallen against the general's blouse and he was slipping away into dreamland.

"He is worn out, and no wonder," softly spoke the general. "I'll tuck him in my cot and tell the orderly to wake him at 6 o'clock and give him some breakfast. Then he can have a horse and join us in the field. He shall ride with me as a personal aide."

Hurried orders were sent from the tent and silently the men fell into the ranks by company, regiment and brigade. And, although Peter was sleeping too busily to know it, it was his work as a scout that moved this imposing force to the front earlier than had been planned and changed the leader's strategy.

In the afternoon, when General Bell had successfully turned the flank of the column sent against him by the wood-road and the day's campaign closed with the blue-shirted "Yanks" on the defensive, a weary but very happy lad with a skinned nose reined in his horse and said:

"You and me was too smart for 'em, Gineral. I've had the grandest time that ever was in the whole world. Even Uncle Nat never rode with the staff."

"You are a chip of the old block, Peter. But we're glad this is only playing at the game of war, aren't we? And the Yanks and the Johnny Rebs are marching and maneuvering under the old flag, your flag and mine and your brave old Uncle Nat's."

"In real dead earnest, I reckon I'm mighty glad of it," was the boy's reply.

The Greatest Machine in the World

A Story About the Mysteries of Your Heart

BY DR. WILLIAM BRADY

LUB-DUP, lub-dup, lub-dup, lub-dup! It is the sound of the machine which most nearly approaches perpetual motion. Soft music made by the quiet working of the only self-lubricating,

The Heart.

self-regulating engine ever invented that runs day and night, year after year, without overhauling and without a breakdown, so long as it isn't abused. *Lub-dup, lub-dup, lub-dup.* A four-cylinder motor which never stalls; silent, efficient, powerful; possessing greater endurance and adaptability than any other apparatus ever designed to do useful work.

Lub-dup, lub-dup. In order to hear its gentle, murmuring throb you have to place your ear directly upon the casing, and even then it requires long practice to distinguish the normal sound of the motor from the sounds it makes when subjected to unnatural strain or injured by bad fuel.

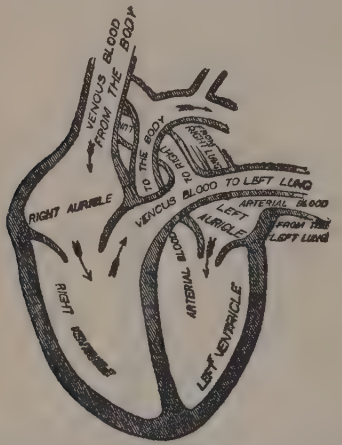
The expert mechanician can tell by listening whether it is running all right. The first sound, *lub,* tells him the quality and strength of the muscle—for the machine is nothing but a muscle as big as your fist. The second sound, *dup,* shorter, sharper, higher pitched, tells him whether the valves close in good order and gives him a good idea of the load the machine is carrying—the back pressure of the blood column against the valves.

This powerful little engine is said to be the only organ in the body that never rests, but that is a mistake of observation. As a matter of fact the heart rests nearly half the time when it is in good condition. Indeed it takes a brief rest between each effort—does its seventy or eighty tricks of duty per minute with a rest after each beat.

What Makes It Work

Nerve centers or ganglia situated in the heart wall supply the impulse which causes

contraction of the muscle; its control is largely contained within itself, though in part regulated by impulses sent along the great pneumogastric, or tenth cranial nerve, from a center in the medulla of the brain. Thus, the heart of an animal will continue beating for several minutes after it has been completely removed from the body. Dr. Carrel, of Rockefeller Insti-



A Diagram Showing Course of the Blood through the Heart.

tute, succeeded in keeping a system of vital organs—heart, lungs, stomach, kidneys—working and functioning naturally for thirteen hours after their complete removal from a cat. To be sure, a cat has nine lives. Well, a man has a wonderful hold on vitality, too. A great number of cases of stab and gunshot wounds of the heart are on record, in which the wound was repaired and recovery followed.

What Being Alive Is

Being alive is just a process of combustion. Every second, asleep or awake, at rest or at work, cells and tissues are being burned up to supply energy for the performance of mental and physical functions. The products of combustion, CO_2 (carbonic acid gas or carbon dioxide) particularly—this and other combustion products—stimulate muscular and organic functions up to a certain point; when the accumulation of combustion products becomes excessive, one gets very tired, and that means depression of muscular and organic functions.

Now, the heart muscle is supplied with blood like other muscles, and the heart responds to the same impulses other muscles respond to. It may tire quickly, or it may have great endurance, according to the way you train it, just like other muscles.

The greatest engine in the world is not so delicate but that it may be repaired by human hands when injured. Nor is it so entirely automatic that you cannot permanently ruin it by subjecting it to unreasonable demands or by feeding it tainted fuel—fuel adulterated with such poisons as alcohol, tobacco and certain drugs. Intelligently cared for, the heart is capable of wonderful endurance and extraordinary effort in an emergency; you can train your heart so that it will respond in time of need, or you can abuse it and render it incompetent for even ordinary emergencies.

Tiny Machine Pumps Ten Tons of Blood Every Day

Learn to think of your heart as a little motor which pumps about three ounces of blood out into the arteries at every beat, thirteen pounds of blood per minute, nearly ten tons per day—a tidy bit of work for a machine weighing only three-fourths of a pound. And that presupposes that

you are sitting around quietly all day long—if a Scout ever spends a whole day that way. Playing football, hiking, or swimming, your heart does tremendously more

The Heart at Rest. *At the End of a Long Run.* *Three Weeks Later, Showing Growth.*

Exercise, Carefully Taken, Makes the Heart Grow Larger and Stronger, as the Three Sketches Show.

work than the figures show, yet never kicks so long as you treat it well.

How You Get Your Second Wind

In a mile run you begin to feel short of breath after the first eighth or so; you can't grab quite enough air to satisfy your oxygen hunger. But you keep running, for you know that you will get "second wind" pretty soon. After you get it you can keep on for one or more miles without any trouble at all. That is, if you have a good heart you can.

Second wind represents the most vitally important function of an athlete's heart, the ability to apply reserve force in an unusual effort, or, in other words, the efficiency of the heart. It means that the muscle has been "trained" by regular and persistent effort until it is capable of meeting not only everyday needs, but also the great demands of emergency.

Everyone in health has more or less reserve force to call upon in time of need, but the difference between the untrained heart and the trained heart is that the latter has a wider limit of efficiency. The tobacco user, the user of alcohol, or drugs, on the other hand, has a very narrow limit of reserve power in his heart. That is why he is bound to lose out, sooner or later, in competition with the athlete who does not believe in supplying adulterated fuel to a valuable machine. That is why old Hans Wagner still bats rings around 'em in the National—Hans has no use for cigarettes.

Second wind is apt to fail the fellow who abuses his heart habitually, either by poisoning it or by subjecting it to undue

Fig. 1, A to B, represents the normal capacity of the heart. B to C, the normal reserve force. A to C, the full capacity of heart under severe strain, as in a football game or race.

Fig. 2, the same in the trained heart. Notice the additional reserve power which the trained athlete may call upon in an emergency.

strain without the proper preliminary training. The want of breath which im-

mediately precedes the coming of second wind is due to stretching, or, as doctors say, dilatation of the heart muscle. This point is reached early in those with damaged hearts, and maybe second wind fails to come at all.

In that case, the dilatation remains for days or weeks, or forever, and the victim suffers permanent shortness of breath, palpitation, throbbing in the throat, weakness, inability to do either mental or physical work for any time, and general poor health. So you see why it is that well-meaning physical directors and medical advisers often oppose physical contests like football and track meets for young fellows who have not gone through a regular course of training in preparation for the strain to which their heats will be subjected. If a man has not carefully developed a good limit of reserve muscle power in his little ten-ounce engine, he has no right to injure the engine with any sudden strain.

"Training," then, is simply a gradual development of the heart muscle by exercise, especially the muscle of the right side of the heart, which pumps the blood through the lungs. An athlete must have a large heart.

Master McGrath, a famous greyhound, and Eclipse, a race horse, both famous for endurance rather than speed, had very large hearts. Good training developed their hearts for them. An untrained heart is likely to fail in a severe test, leaving the victim "broken-winded."

Any young person who enters athletics should submit to a physical examination three or four times a year. There is a limit of endurance beyond which it is unsafe to drive the heart, and only a competent physician or physical instructor knows what this limit may be in individual cases.

How to Play Hat Ball

SCOUTS who have played hat ball say the game is a dandy. Here is the way it is played. Each player puts his hat on the ground so that all hats will form a circle. He then stations himself about twelve feet from his hat and thus the players form another circle. A tennis ball or a handkerchief tied around a stone—not too heavy—is then thrown by one of the players. He aims for anybody's hat. If he misses, a small stick or stone is put in his hat, and he must try again. If he misses three times, he must run the gantlet in any way agreed upon; that is, he may run between two lines of players and be properly "spanked" or made to crawl between the legs of all the players standing in a row. If he lands the ball in some other player's hat, that player must rush to his hat, and when he has his hand on the ball, he must say, "Stop!" All the other players, who dash away the minute the ball lights in a hat, must stop running when they hear the order to stop. The boy with the ball can then try to hit any other boy. If he hits the one he aims at, a "forfeit" is placed in that boy's hat; if he misses, a similar forfeit is placed in his own. Every boy must keep his feet in one position, but he may dodge with his body as much as he likes. Whenever a boy gets three forfeits in his hat, he must run the gantlet.

This game furnishes much amusement and excitement, and when properly played, helps a boy to think and act quickly.

Alligators from the Egg Up

Life on Farms Where They Raise Them Instead of Hogs

BY C. L. EDHOLM

ONE of the oddest occupations in the world is that of breeding alligators for commercial purposes, an industry which is carried on in Hot Springs, Ark., and Los Angeles, Cal. Until recent years the alligators in the Southern swamps have been so plentiful that there seemed no necessity for raising them, but the hunters have killed off such large numbers that game laws have been passed for the protection of those that remain. It is said that no less than 3,000,000 alligators were killed in Florida between 1890 and 1900, which indicates the great demand for their hides.

Now, the alligator matures very slowly. At the age of twelve years they are only a couple of feet in length, while the age of the huge specimens, a dozen feet long, is reckoned in centuries. Under these circumstances it will be readily seen that the killing off of the wild alligators would proceed at a much faster rate than natural replacement.

If the alligator farmer had to depend solely upon the sale of the hides for his profits he would find twenty or thirty years a long time to wait for dividends. But the revenue from other sources is quite considerable, and the alligator may be said to earn money for his owner even before he is hatched. One of the features which a spectator pays to visit is the incubating room where the alligator eggs are kept at a temperature of 80 degrees until hatched. This process of incubation requires about two months, and when the baby 'gator emerges from his long and narrow shell he resembles nothing so much as a common lizard.

These little fellows are kept in ponds by themselves, for as the alligator is a cannibal it would be dangerous to put the different sizes in the same enclosure. Even with these precautions there is an occasional fight in which one of the weaker members loses a leg, which is promptly gulped down by his victorious opponent. This makes it necessary to have a hospital enclosure where the wounded are cared for. There are a dozen or so different ponds, each surrounded by a little plot of ground inclosed in chicken wire. Here the various sizes are kept apart, the largest being about twelve feet long.

Of course all of the largest specimens at these farms were captured in the swamps by professional hunters. This requires much courage and experience, as a single blow with the tail can break a man's leg, while the huge jaws could snap off a limb at a single stroke. Experienced hunters who know how to manage them can secure the smaller specimens, two or three feet long, with their hands by gripping the jaws and holding them tightly together. It is a sport that one would not care to recommend to amateurs.

The hides of such animals as are killed are sent to the tanneries in New York and in Newark, N. J., where they are specially treated and made up into suitcases, traveling bags, etc., while the teeth are also utilized in various kinds of jewelry. Even the

feet of the small specimens are used in the manufacture of novelties. Many of the very small specimens are stuffed and used as curios.

In addition to these sources of revenue there is also profit in selling the live alligators to zoological gardens and private collections, and in fact a surprisingly large number of visitors to the farm will purchase little six- or eight-inch specimens as pets. These seem like rather dangerous creatures to have about the house, but at an early age they are really harmless.

One of the most surprising features of the alligator farm is the tricks which have been taught to some of the well-grown specimens. It would seem hopeless to the casual observer to make an alligator perform, for they seem so sluggish and stupid. But they have been taught to shoot the chutes, waddling up the incline of their own volition and apparently enjoying the plunge down the other side into the pool. They have also been taught to draw little carts and do other stunts which are entirely unexpected.

The creatures are fed once a week, every Sunday afternoon, and they squabble over the scraps of slaughter-house refuse, like a lot of hungry pigs. When the meat is tough and stringy they are not able to bite it into convenient morsels and their method of separating it is very amusing to observe. One alligator will swim around the tank with a big piece of meat between his jaws, and presently one or two others will snap at it and get a good grip. Then all parties concerned immediately begin a tremendous tug-of-war, and in a minute or two each alligator swims away with a fragment small enough to swallow.

The fearlessness of the men who handle the alligators is very impressive to the ordinary observer. They think nothing of wading out into the water and reaching down with the bare hands and dragging out four-foot alligators by the jaws. One of the most remarkable feats performed by an attendant at the Los Angeles farm, known as "Alligator Joe," is to secure any specimen at random, turn him on his back on the grass and by means of a few movements of the hand over the creature's throat reduce it to a state of rigidity. Joe claims that this is a case of hypnotism, but whether it is or not the fact remains that he does exercise this remarkable influence over them.

As a rule the alligators are not difficult to manage but during the month of June they become exceedingly active and noisy, bellowing and calling to their mates and arousing the entire vicinity of the farm with their uncouth noises. At this season, too, the large males sometimes indulge in fearful duels and one of the oldest bulls bears the mark of such a conflict in the shape of a broken under jaw.

Alligators Shoot the Chutes

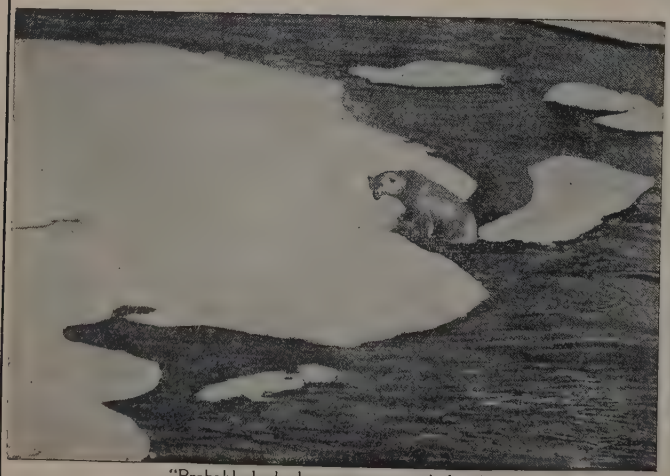
"Going Up!"

"Coming Down!"

They Are Fed Only Once a Week—No Wonder an Alligator Bellows!

This Bear They Got With a Lasso

When "Silver King" Tried to Climb into the Launch



"Probably he had never seen man before"

"Swung him over the ship's deck"

The Capture of "Silver King"[1]

BY PAUL J. RAINEY

Photographs by the Author

ON Saturday, July 30, at three o'clock in the morning, in one of the small bays of Ellesmere-land, about the seventy-seventh parallel, we sighted a large bear on the ice, a mile or two ahead. He stood on the very edge of an enormous pan of ice, which extended some two miles back to the shore. The lofty mountains of the mainland, furrowed with enormous glaciers, made a beautiful background, and the cold midnight sun, together with the arctic calm, completed a picture that any man would remember to his dying day.

The bear stood with his long neck thrust well forward, trying to get our scent. Probably he had never seen man before. We headed almost straight for him, and when the ship hit the ice a hundred yards to his left, he took to the water like a duck.

One of the most remarkable things about a polar bear is his cleverness in diving from pan ice. The most difficult dive for an expert swimmer to make is from something almost at a level with the water. The bear makes a more beautiful dive than I have ever seen made by a human swimmer, and when he glides into the water he leaves hardly a ripple behind him. He cannot stay under water very long, however, as we found when pursuing him with the launches.

We quickly decided to take that bear alive, and after cutting him off from the ice we lowered our launch and started in pursuit. Although these bears are able to stay in the water for hours, they are not very fast swimmers; and we very easily overtook our quarry. When we ran close up to him, he turned to fight; and then we threw a rope lasso over his head, took a turn on a cleat and started to tow him to the ship. His struggles were something terrific, and in a moment he had thrown the rope off his neck and was free. Recoiling our rope, we threw it and caught him again, and again he fought his way out of the noose to freedom. This was repeated many times. He rarely stayed in the rope for more than three or four minutes at a time, as the noose would slip over his small head very easily, when we would be compelled to go back and start all over again.

Finally, however, the rope held, and we succeeded in getting the bear to the ship, when our men swung out the large crane or derrick, operated by a powerful steam winch, to hoist him aboard. When we passed the rope to the hands on deck they were compelled to hold the animal very tightly to keep him from climbing into the

[1] From the Zoological Society Bulletin, No. 43, reprinted by courtesy of the New York Zoological Society.

launch. Presently it seemed to me that the bear was choking, and I ordered the rope loosened at once. Too late! His eyes were glassy, and he was stone dead.

This unfortunate experience taught me something, however, in the art of catching large bears, and I decided to use different tactics the next time. The first mistake we made was in getting the rope squarely around the neck of the animal, so I decided that the next bear we roped I would leave the noose slack until we had gotten his forelegs through it, when we could hoist him on board and lower him into the hold without any danger of choking him.

On Thursday, August 4, we sighted a large bear, that the Eskimos took to be a female, but which proved to be the large male bear now in the Zoological Park, swimming among the small broken pans. We lowered the launch and started after him. We had considerable difficulty in getting close to him, as he would gain on us very rapidly whenever he crossed over a pan which we were compelled to go around. Finally, however, we succeeded in cutting him off by running between him and the pan for which he was making. Just then a very laughable thing happened. Captain Bartlett, who was steering the launch, was sitting on one side, at the wheel. When the bear saw that he was cut off from the pan, he dove, and we thought he would come up at the other side of the boat. This, however, was not in his mind, and he came up directly alongside, and smashed the boat a terrible blow just about a foot under Captain Bartlett. Bartlett gave one wild jump across the boat, not even taking time to change his sitting position, and landed very neatly on the seat of the other side.

The bear seemed to have an idea of getting into the launch, and we had to punch him away with the boathook. Finally we succeeded in roping him, and this time I took good care to leave the rope slack until he had put his forelegs through it, when I took a turn with our end of the rope around a cleat just as the bear was busy climbing out on the ice. In the excitement, we had neglected to reverse the engine, and when he went out on the ice he very nearly took the launch with him. To have a 900 or 1000 pound bear fastened to your launch and dragging you out on the ice, under a full head of steam, is not a very pleasant position to be in. At this time the bear could very easily have gotten into the launch!

Finally, however, we succeeded in slacking away the rope, got the engine going astern, and gradually started to drag the animal into the water. It was a wonderful sight to see this enormous brute with a strong rope just behind his fore-shoulders. He would rear on his hind legs, bite at the rope and jump up and down; but we steadily and surely dragged him toward the edge. Finally, seeing that the inevitable was coming, with a vicious growl he plunged into the water and started for us.

We did not have much difficulty in keeping him out, except when we were turning the launch around and getting it going ahead toward the ship, half a mile distant. The way he churned the water, and twisted and surged, was really thrilling, but he had left the ice-pans forever.

We signaled the ship to move into open water, as we needed plenty of sea room in which to handle our bear, having had all the experience we wanted in the broken ice.

After we had gotten some 200 or 300 yards away from the pan-ice, the big brute succeeded in getting out of the rope, and I was compelled to rope him again. This time he would not keep his head high

enough out of the water to enable me to get the rope over him, so we were compelled to run up close, and hang the noose on the end of the boathook. By dropping the noose over his head and carefully allowing it to stay slack until he had gotten one or both legs through, we at last succeeded in getting him fast once more, and started to the ship, but not, however, before he had made one or two unsuccessful attempts to climb into the launch. The placing of the noose over his head with the boat hook had its disadvantages, and was rather dangerous, because we were compelled to go very close to the bear.

We towed him to the ship, swung out the crane, fastened the hook onto the rope and, in the twinkling of an eye, Mr. Green, the mate, had hoisted him high into the air and swung him over the ship's deck. This caused a wild stampede among the Eskimos, who were perfectly familiar with the strength and power of a full-grown male polar bear. Willing hands were at the swinging tackle of the derrick, however, and in another moment we had the roaring, raging monster over the hatch of No. 1 hold. As soon as he had been gently lowered down, all hands made a wild rush for the hatch to have a look at our pet.

We found him surprisingly cool, merely sitting on his haunches, growling, and making the champing noise peculiar to bears when angry. The rope was still around him, but no weight being on it the noose was quite loose, and as soon as he moved around it fell off.

The next day, to my surprise, our captive ate small pieces of bread and meat that were thrown down to him. Then the question arose, How shall we get him into the cage?

After starving our bear for four or five days, we placed a fine, juicy piece of walrus meat and a tub of fresh water inside the cage, and lowered it down to the bear. He started directly in, but the sailor who was working the trapdoor let it drop too soon, and the bear held it up with his back while he backed out.

This episode seemed to make the bear very angry, for he jumped upon the top of the cage, and found that he could just put his head and forepaws over the edge of the hatch and onto the deck!

Again there was a wild stampede of Eskimos, sailors, and dogs; for it looked as if he surely would be up on the deck in an instant. In the excitement, Michael, the wheelman, left the wheel, and for a moment everything was in a state bordering on panic.

At this point one of the sailors did a very brave thing. He ran up and struck the bear heavily over the head with a deck mop, whereupon, after giving a savage growl, the animal went back into the hold.

Immediately we hoisted the cage out, and waited another twenty-four hours, when it was again lowered with a good supply of walrus meat and fresh water, as before. This was quite enough for "Silver King" (as we had named him), and in he went. Without taking time to untie the rope that held the trapdoor, we cut it; the door fell into place and our bear was in his cage.

The Scout Merit Badge of Angling

A Famous Fisherman Writes of Some Things All Boys Should Know About this Fascinating Sport

BY DR. HENRY VAN DYKE

UNITED STATES MINISTER TO THE NETHERLANDS, FORMERLY PROFESSOR OF LITERATURE, PRINCETON UNIVERSITY

The Requirements for the Merit Badge of Angling

To obtain a merit badge for Angling, a Scout must:

1. Catch and name seven different species of fishes by the usual angling methods (fly-casting, bait-casting, trolling and bait-fishing). At least one species must be taken by fly-casting, and one by bait-casting. In single-handed fly-casting the rod must not exceed seven ounces in weight; in double-handed fly-casting one ounce in weight may be allowed for each foot in length; in bait-fishing and trolling the rod must not exceed ten feet in length nor twelve ounces in weight.

2. Show proficiency in accurate single-handed casting with the fly for distances of 30, 40, and 50 feet, and in bait-casting for distances of 40, 60, and 70 feet.

3. Make three artificial flies (either after three standard patterns, or in imitation of different natural flies), and take fish with at least two of them. Make a neat single gut leader at least four feet long, or a twisted or braided leader at least three feet long. Splice the broken joint of a rod neatly.

4. Give the open season for the game fishes in his vicinity, and explain how and why they are protected by the law.

THE purpose of the Boy Scout requirements for the Merit Badge in Angling, as I understand it, is directed to the practical education of the young angler, that he may start up the path of self-respecting and self-relying sportsmanship, and become "thoroughly furnished unto all good works."

The list of requirements, I think, is a very fair one; not too hard and not too easy, and may be generally applied to all parts of the country.

I believe that what should be done for the Scout angler may be summed up under three heads.

First, encourage him in sportsmanlike tastes and habits; and this includes, in angling, the use of as light tackle as possible to catch fish.

Second, teach him how to use his tools accurately.

Third, prepare him as far as possible to repair damages to his tackle and to make with his own hands at least some of the things he uses.

It is very desirable that the Boy Scout who is to enjoy the art of angling should get into good habits at the beginning and not fish with a "lamming-pole" and "bed-rope." The use of light tackle is eminently desirable.

Can You Cast?

The Scout should make the best of every opportunity he has of learning fly casting and bait casting under the direction of an expert angler.

Objection may be made that fly casting should not be emphasized in such a requirement owing to the fact that trout and salmon are not to be found in many parts of the United States. Yet there are a great many other kinds of fish which will take the fly nicely if they are properly encouraged. Shad, bass, perch, chub, rock-fish, young bluefish, mackerel and many other varieties can be taken with the fly. Even pike and pickerel will rise to a large white fly if it is properly handled. In fact, it may be safely said that every fish which at any time feeds upon, or near, the surface of the water, will take the fly.

Many good anglers maintain that the artificial fly is not really an imitation of any natural insect, but that it attracts the fish largely from curiosity. I think this is certainly true in the case of salmon flies. In my opinion, therefore, the boy should be left free to choose which of the two theories of fly fishing he wishes to follow: the imitation of the natural fly, or the making of an artificial fly on one of those patterns which have proved successful in stimulating the curiosity of the fish.

Other Things Worth Knowing

I should not consider a boy who cannot splice a broken rod on the stream, or put together a serviceable gut leader, or tie good, clean knots as at all qualified to call himself an angler. The Boy Scout who fishes ought to know how to take care of himself in those little emergencies which so often come to an angler. He ought, also, to be much more anxious about doing his work neatly and skillfully than about making a big catch, or "breaking a record." He should consider the fish as his antagonist in a game of skill and try to bring him to the basket in a true sporting style.

It goes without saying that every fish which is not to be returned to the water should be promptly killed as soon as he is taken out of it. The best method of doing this with fish of moderate size is by a quick, sharp blow on the back of the head. This, I believe, is the most painless, and therefore the best method. There are, of course, some fish, like catfish and eels, which are extremely difficult to kill. In their case I do not know what method to recommend as best. Personally I prefer not to catch them.

Since every Boy Scout is required to cooperate with his local, state and national authorities in protecting birds, animals and game fishes from destruction at the hands of those who are fast depleting our national resources, it is essential that each Boy Scout familiarize himself with the work of the game and fish commissions of both his state and the national government, so that he may learn all about the laws covering the open and closed seasons for fish in his vicinity. Information of this nature will be sent to any Scout upon application to the State Game Warden.

I trust these suggestions will prove helpful to the Boy Scout angler who is ambitious to acquire a Merit Badge in this subject. They are written by one who thinks that angling is one of the most delightful and long-lasting pastimes and recreations in the world. You can begin it when you are very young and continue it when you are quite old. It takes you out-of-doors and usually into the loveliest regions of nature, giving you an opportunity to become well acquainted with the trees, the birds, and the flowers, and above all, with that wonderful element—water. It teaches patience, and encourages inventiveness and an adventurous spirit. The good angler does not wait for the fish to come to him. He goes out to look for the fish, and sometimes his quest calls for endurance and skill and courage on his part, when he gets into a "tight place" on a wild stream, or when a sudden storm catches him out at sea or on a wide lake.

He ought to learn two habits. First, that of being helpful and companionable to other anglers. A good fisherman is always ready to share his bread and cheese with a brother angler or to lend him some flies or to help him mend his tackle. Second, he should remember that it is not all of fishing to fish, but that the pleasant memories and close observations of nature which he brings home with him from a day's outing are really his best reward.

Scouts Kill Western Rattler

BY L. F. GAUSS

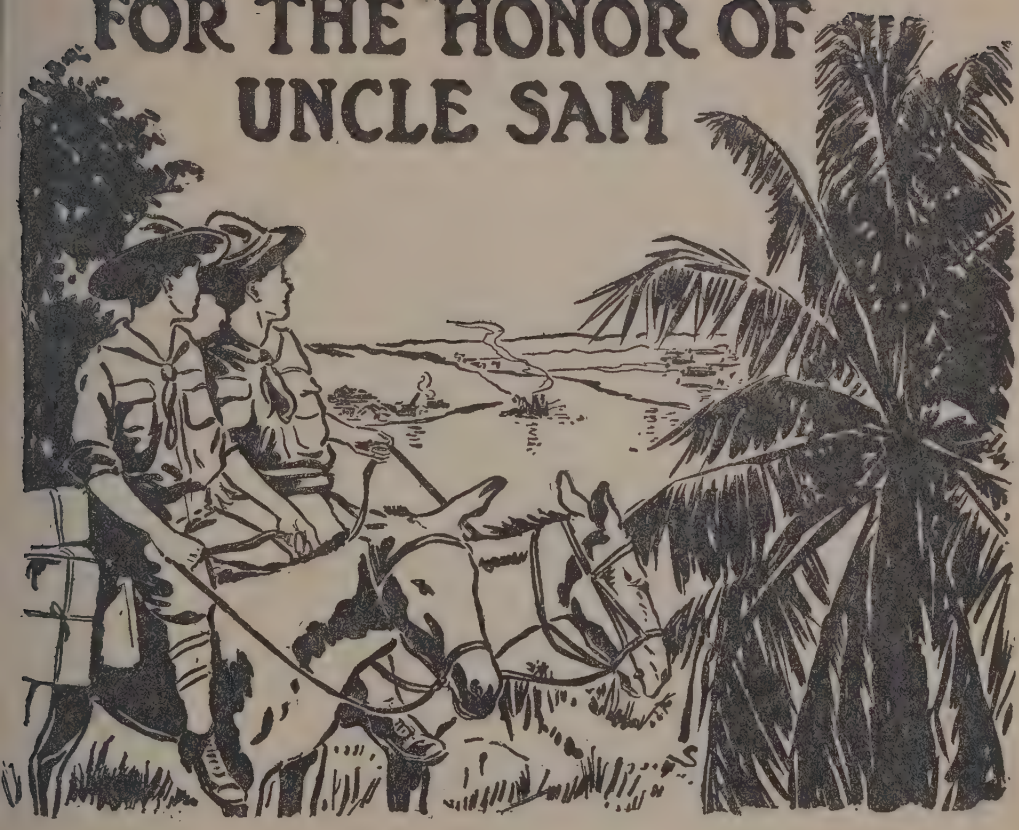
TWO Boy Scouts of Greeley, Colorado, were taking a hike recently through the mountains in the region of Estes Park. The country up that way is pretty wild, except in the beaten trail. It is a tangle of evergreens, wild bushes of various kinds, sage and kinnikinnick. In the winter time it is tenanted by bears; in the summer the greatest danger one encounters is the mountain rattler, which is said to be one of the most poisonous snakes known.

These boys were following a trail that led off from the main road when they were suddenly arrested by the cry of someone in distress. They tracked the cry at once to a child's playhouse among the pines at the side of the trail. The house was roughly built of logs and pine boughs. In it, hanging by her hands from the rafters, was a little girl, her feet drawn up in terror, for beneath her, coiled ready to strike, was a huge, checkered snake with thick body and heavy blunt tail—a mountain rattler.

"Go out!" cried the child. "It'll bite you." For the boys were standing within reach of the rattler's spring.

But they stood their ground, and beat the rattler down with a volley of sticks and stones. After this they lifted the little girl down from the rafters to safety and carried the dead rattler home as a trophy.

FOR THE HONOR OF UNCLE SAM



How Two Scouts Did a Grand Good Turn On the Canal Zone

BY PERCY K. FITZHUGH

AUTHOR OF "ALONG THE MOHAWK TRAIL," "ON THE TRAIL OF LA SALLE," ETC.

"Beyond the Chagres River
Is the Jungle's poisonous breath;
Lurk the serpent and the fever,
'Long the paths that lead to death."

O-O-H-H, but we—*simply jollied—the life* out of him!"

LeRoy Clayton turned and glanced curiously at the speaker; then, amid the laughter which followed, he strolled back along the wide veranda and joined the little group.

The half-dozen boys were gathered in a corner of the main portico of the Tivoli, Uncle Sam's big hotel on Ancon Hill in

Panama. Below them lay the old city of Panama, with its narrow, crooked streets, and beyond, the bay with its ships riding at anchor in the slow roll of the blue Pacific, their spars and rigging touched with the first crimson glow of the tropical sunset. Here and there could be seen the lateen sail of a fishing-smack hurrying shoreward obedient to the lurid warning; for the night falls suddenly in the tropics. There were more ships than usual, for the next day but one there was to be the great celebration—the formal opening of the Canal.

LeRoy Clayton stood on the outskirts of the group, listening. Pierce Van Auken was swinging his legs from the rail and he had the floor.

"Why, you know those things you put under a plate to make it dance? Kind of a rubber ball with a long tube? You ought to have seen him stare when we worked that on him. It was as good as a circus! Fred told him that up in the States——"

"Him much big rich country," mocked the boy called Fred. "We told him that up in the States all the plates and cups and saucers dance and sing and talk. Oh, we had him jollied to a turn!"

"We told him that on the day the Canal opens," laughed Pierce, "Uncle Sam is going to hand out souvenirs. You'd laugh yourself hoarse if you could hear the way Wolley was stringing him—told him Uncle Sam was going to give one of these motion-picture machines and a box with a 'much bright devil' in it."

"He swallowed all that, did he?" LeRoy asked.

"Sure, he'd swallow anything, that kid. We told him Uncle Sam always hands out souvenirs whenever he opens a new canal. He's got Uncle Sam sized up for a wizard and a good spender."

Harry Morse shook his head in reminiscent delight. "He's going to dress his monkey up so as to be ready when the souvenirs come," said he.

"Will he be expecting the plates and cups and saucers that talk and sing?" asked Fred.

"Oh, sure!"

LeRoy thrust his hands down into his trousers pockets and bit his lip ruminatively. "Hmm," said he, with an amusement that was half thoughtful, half rueful. "You mean that Mendoza Trail kid, don't you?"

"Sure! He thinks the United States has got Aladdin's Cave beat all kinds of ways. We told him not to worry—he'd get his. He'll be waiting, all right!"

"He'll have *some wait,*" observed another boy.

Fred shook his head exultantly and hammered the rail with delight.

"That a medal on your coat, Clayton?" asked one of the boys, as he jumped down from the rail to go.

"This?" queried LeRoy, fingering the bronze cross of the Scouts, which he wore. "Why, no, that's an alarm-clock, only don't tell anybody, will you?"

The questioner seemed a little chagrined.

"Any fellow can buy one of those," he said, sarcastically.

"Sure," said LeRoy, "you get one with a book of trading-stamps. Ask me another."

There was a significant silence.

LeRoy was not half bad as a jollier himself.

Yes, they had jollied the life out of the Mendoza Trail kid; what little life there was left in him. It had been easy, for he would swallow anything. He *had* swallowed pretty nearly everything, but

now, thank goodness, it was over and little Nicuesarro had gone back to his home in the jungle after his sojourn in Wonderland.

He had swallowed every bitter draught which the nurses had given him; he had had spoon-handles stuck down his throat till he gagged, vicious hollow needles thrust into his thigh, and ice piled on his little chest. He had swallowed capsules and tablets and powders without number and without complaint. But he had won the fight, had little Nicuesarro; the magic liquid in the hollow needle of the mysterious white men had done its work; and little Nicuesarro had gone back to his jungle and to his precious monkey.

Six weeks before, the Sanitary Inspector, pushing his lonely, unmarked way up the old, overgrown Mendoza Trail, had come upon the tiny thatched shack where little Nicuesarro lived. It was a dozen miles beyond nowhere—but that is just where the Sanitary Inspector is sure to go. Little Nicuesarro's mother was half Spanish, half Indian, and his father was all Spanish, which was no improvement.

But the Sanitary Inspector will sit down and eat a mango and meet you half way in any language you please, Spiggotty, or San Blas, or Jamaican gibberish.

"Trail worse—bad—all time," said the Inspector. "No more trail at all."

"Then you no come more?"

"Oh, yes, I will; Kernergorg, he send me."

"Uuh," laughed the mother, "good!"

They liked these semi-annual visits up in the jungle. The Sanitary Inspector was the only person they ever saw.

"Where's little Nic?"

"U-u-uh, he no play with monkey."

"No? What's trouble?"

"U-u-u-h."

"Where is he?"

He was lying among the pineapples out in the little clearing, and when the Inspector heard that little Nicuesarro had not played with his precious monkey he was suspicious. He knew what it meant when a little boy thirty miles up the Chagres River neglects his pet monkey and lies down among the pineapples and does not come to greet the Inspector.

Tenderly he lifted little Nicuesarro into his arms and the child looked at him with heavy eyes and with a smile which was worse than tears.

"No feel good, eh?"

The little fellow shook his head.

"Open mouth—wide. Kernergorg he make 'em feel good."

The child, his hot head hanging back in the Inspector's arms, smiled wanly, showing his white teeth, for the name of Colonel Gorgas was a magic name in the remotest jungle, right up to the Costa Rican border.

Then and there had begun the catalogue of wonders which convinced little Nicuesarro that he was in the hands of wizards. The Sanitary Inspector produced a little glass tube, looked at it, shook it, and put it in little Nic's mouth. This tube had a silvery devil in it and mystical numbers on it, and it told the white man what was the matter with little Nicuesarro.

He was in the grip of an awful enemy, the Chagres fever; the enemy which had mowed down his big brother and his two sisters. But that was before the days of Kernergorg, who now wrought wonders in the mystical kingdom of "Unclesam," thirty miles away.

So the Inspector got on his donkey, holding little Nicuesarro in his arms, and started off with him to that mysterious land, "The Zone."

They came into the line of the Canal at Las Cascadas Station, and then the

wonders piled thick and fast. Down in the depths of the big trench, little Nicuesarro saw the great steam-shovels at work and the ceaseless din of the mammoth drills assailed his reeling senses and made his little head throb harder.

"Big devils; him make much noise," he murmured.

"Yes, they make a lot of noise, Nic; lie down here on the bench like a good boy for just a minute," soothed the Inspector.

"Unclemsam, he not kill me dead?" The drowsy eyes looked apprehensive.

"No, he won't kill you, Nic."

The throbbing head lay back on the bench and the fever-racked child saw the Inspector do the most extraordinary thing which he had ever seen done in his life. He picked up two things, holding one to his ear and the other to his mouth and into the latter he talked.

"You talk him Unclemsam?"

"Yes, he's going to send a white wagon for us, Nic."

"We go him house?"

"One of his houses, yes; Kernergorg's house."

And sure enough—wonder of wonders—along came a beautiful, magic wagon with no horses and with two wizard men in spotless white on its seat, and stopped at Las Cascadas Station. There was a big red cross painted on it and a place inside that was softer than the pineapple patch; and on this they laid little Nicuesarro and whizzed him off through the land of wonders.

That was the last that little Nicuesarro knew for three weeks. Then his hollow eyes looking out of the little pinched face began to watch the white-robed nurses as they glided silently about, and he asked if they were angels.

Once his nervous little hand, exploring outside the sheet, encountered a strange thing that he could see through and that had a long twisted cord running from it. Inside was a thin wire. It had a little handle and this he curiously turned, when lo, a dazzling light appeared inside. The nurse came and smilingly turned it off and on many times, till little Nicuesarro had to blink his eyes from watching it.

"Him bright devil," he said weakly.

Then there came a day when little Nicuesarro opened his eyes and saw a man all in white with a white moustache and white hair and shining gold on his shoulders, looking down at him and smiling.

It was the wizard, Kernergorg, himself!

And that is how it came to pass that the next day they put little Nicuesarro in a chair with wheels and placed a soft pillow behind his head and rolled him out to a spot under the coconut palms on the beautiful grounds of Ancon Hospital; and here he sat, languid and happy, taking in the wonders.

And that is how it fell out that the Zone boys, making a short-cut across the hospital grounds to gather fiber for coconut caps, loitered about the queer, inquisitive little fellow, and jollied the life out of him.

He was grateful and delighted, and said "Gracia," which means "Thank you."

It was easy because, you see, he was in the land of wonders and he would swallow anything.

And that, in turn, is how it came about that LeRoy Clayton lay awake a good part of the night, thinking of this talk he had heard.

LeRoy's father was one of the "Old

Man's"[1] engineers over at Culebra, and he had planned the emergency dam. He and Mrs. Clayton and LeRoy lived at the Tivoli, but the boy's parents had gone to the States and LeRoy was alone in his glory for the time being.

First and last, I am not so sure but that this whole story hinges on a "good turn" performed by Mrs. Clayton on the very day she sailed, and it simply shows the far-reaching effects of good turns, for here was one performed on the Atlantic shore one afternoon, and what did it do but pop up like a Jack-in-the-box on the Pacific side the very next day, producing another good turn which in turn produced a stunt and—oh, well, there is no telling where a good turn will lead.

Mrs. Clayton stopped in Colon and asked Warren Archer if he didn't want to "go across" and keep LeRoy company for a few days, and so the next morning Warren came over with a suit-case and a broad smile and twenty dollars "Spiggoty" for the grand celebration.

"It's going to be some show," said he.

LeRoy was silent.

"What's the matter, you old grouch?" said Warren; "lonely without papa and mamma? I suppose your father was disappointed that he couldn't stay for it."

"He isn't the only one that'll be disappointed," said LeRoy.

"Don't you fool yourself," said Warren, "if you had come across on the train this morning you wouldn't have seen much room for disappointment. Why, my fraptious boy, everything between here and Colon is red, white and blue. The Administration Building has a hundred flags on it. Empire, Culebra—every station is decorated. Why, Uncle Sam——"

"Uncle Sam is going to be made out to be a bluff and a liar," interrupted LeRoy.

"Dear, dear! Who was telling you that?"

"Listen, Worry. This bunch (Van Auken and those fellows) they've been jollying the life out of that little Chagres Fever kid from up Mendoza Trail. They told him Uncle Sam would give out souvenirs to everybody—motion picture machines (the poor little chap must have seen one of those) and a box with a bright devil in it——"

"What'd they mean by that?"

"Don't know; they promised him everything that happened to come into their heads; plates and cups that talk and sing; and the poor little kid has gone back home counting on having those things. You see how it was with him, Worry; he thinks the Zone is a sort of fairyland, and I hate to think of the kid's being disappointed. I was thinking last night—I suppose you'll think I'm crazy—but I was thinking I'd just like to take my celebration money and buy a lot of stuff and go up there with it. It would be a good turn," he added, half shamefacedly.

"It would be a fool thing to do, though," said Warren, "and you'd miss the celebration."

"I wouldn't mind missing that so much," said LeRoy, "but I don't know how I could make good all the crazy promises those fellows made to little What's-his-name."

"You don't mean you're actually thinking of *doing* such an idiotic thing!"

"I'd like to," said LeRoy, doubtfully. "I could almost do it, too; but a 'box with a bright devil in it'—I don't know what that could be——"

"Why, sure! A pocket flashlight!" cried Warren.

[1] Col. Goethals.

LeRoy nearly jumped out of his chair.

"Keep your seats, ladies and gentlemen," said Warren. "It *would* be a great stunt, wouldn't it?" he added, thoughtfully.

"It would give us a Scout smile as broad as Culebra Cut," suggested LeRoy.

"You bet! Suppose we do it. Come on, I'm with you!"

"But how about the dishes that talk and sing?" LeRoy asked, and at this poser Warren shook his head ruefully.

"'Wasmatterthyou? Let up!'"

Nevertheless, they resolved to make the trip for "the honor of Uncle Sam," as LeRoy said, so they made one fund of their celebration savings and with this they spent a good part of the day along the Avenada de Centralle, purchasing a motion-picture machine, an American flag, a sumptuous pocket flashlight with two extra batteries and other odds and ends in the way of toys.

And yet, somehow, both felt that there was something lacking and LeRoy thought ruefully of the words of Fred: *Will he be expecting the plates and cups that can talk and sing?*

In the middle of the night Warren was roused out of his peaceful slumber by a terrific slap between his shoulders, immediately followed by a vigorous towsling of his head.

"I've got it! I've got it!" shouted LeRoy, sitting up and bringing the pillow like a ghostly cudgel down upon his companion's head.

The victim, rubbing his eyes, drowsily attempted to stem the fusillade of blows.

"Got what? Wasmatterthyou? *Let up!*"

"A Scout is thoughtful," shouted LeRoy.

"*Let up!* W-who said he w-wasn't?"

"A Scout is thoughtful; he uses his brains——"

"A Scout uses his fists in a minute if you don't——"

"What is a plate that talks and sings?" demanded LeRoy, waving the pillow.

"'S that a con-undrum?"

"A phonograph record, you gump!" shouted LeRoy. "Can you beat that?"

In less than half a minute Warren was up fumbling in his trousers pocket. "Four dollars Spiggoty for donkey hire," said he, "that leaves two—four—five—seven. Can we get a phonograph for fifteen dollars?"

"Can we! *Can* we!" mocked LeRoy, rising menacingly to his full height upon the bed. "*Can* we? Didn't I see a second-hand one at Maduro's for eight?"

"I didn't see it."

"A Scout is observant," said LeRoy grimly. And he let fly the pillow, which went to its mark with deadly precision.

For a Scout is a good shot.

The old Mendoza Trail was about as tangible as the equator. It was like the Fountain of Perpetual Youth—there wasn't any. The old Mendoza Trail was a myth. Once upon a time an old Span-

iard named Mendoza had hewed his way with a machete up toward the headwaters of the Chagres River. But hewing your way through the jungle is like breathing on a pane of glass—you've got to keep hewing or the trail will disappear; the jungle will close in about it. That is why the isolated shacks far up in the jungle have no paths leading to their doors.

Yet by virtue of an extra sense which Scouts and woodmen possess, it *is* possible, if one be keen and observant, to trace a former pathway through the dense, tangled wilderness of the tropics. The Zone Sanitary Inspector who does this is pretty certain, after a day's or a week's journey, to come upon some little shack cut off for many years from any visible avenue of communication with the outside world.

When the first Zone Inspectors appeared out of the trackless jungle before these remote dwellings, the natives thought they were supernatural beings and treated them accordingly.

We hear a great deal about the famous scouts of pioneer days and their triumphs in tracking and trailing, but the most amazing feats of this art have been performed by the United States Sanitary Inspectors on the Isthmus of Panama, and many of the boys there, too, have acquired this strange extra sense.

For a mile or two the old Mendoza Trail is quite inviting and you jog along confidently. Then the trail becomes a quitter.

But the two treasure-laden boys who sat astride their little donkeys and looked into the rank, pathless jungle before them were not quitters.

They cast a wistful look back toward Las Cascadas Station. There above the barracks of Camp Otis waved the Stars and Stripes and the tower which rose among the palm trees at Gamboa was gay with bunting. Through the intervening solitude they could hear the tooting of the tug, *Gatun,* as she steamed about the Cut, busy in the festive business of preparation.

"The Commissary boys are going to send rockets up at night from Gold Hill," said LeRoy.

"It'll be some sight," observed Warren.

"There'll never be another celebration like this," LeRoy said, half regretfully.

"Well, there'll never be another good turn like this—nor another good laugh like it either if you come to that. Oh, just wait till I see Van Auken and that bunch! You'll need a yard-stick to measure my Scout smile."

"Well, here's where we pick her up," said LeRoy. "Ever try Balboa's trick?" He looked cross-eyed into the denseness before him and sure enough there appeared to his strained vision the faintest suggestion of a path, hovering, as it were, between visibility and invisibility. Along this they jogged single file, Warren taking all the baggage while LeRoy went on ahead reaching forward and chopping away the growth with his machete.

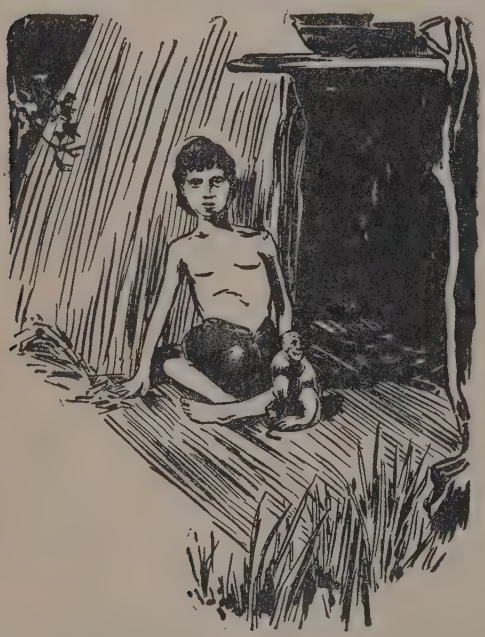
Sometimes it was a veritable green tunnel through which they passed, the dank growth being as thick above them as on the sides, and it was necessary for one or other of the boys always to go ahead swinging his machete continually. Making fun out of the whole affair, as a Scout is pretty sure to do, they accommodated the slashing motion of the machete to a sing-song recital of the words, "For—the —*sake*—of—Un-cle-Sam!"

They had left the canal at sunrise and when they hewed out a little clearing and pitched their balloon-silk shelter at sunset, they had traveled for thirteen hours.

"And I'll be ever so provoked," said

LeRoy, mincingly, "if it turns out that we've headed wrong."

The next day their progress was impeded by tropical showers and the sturdy little donkeys plodded along through green mush, whence arose the sickening odor of the jungle. The rains seemed to bring forth legions of gigantic spiders and hideous insects which dropped upon them from



"The principal thing about him was his stare."

above and which they found on clothing, saddle and bridle, brushing them off with a shudder.

But before the brief, green twilight had changed to darkness they came out, bedraggled, torn and weary, into a little clearing where stood the most insignificant abode they had ever seen. It was made entirely of thatch and seemed rather the handiwork of nature than of man.

A little boy with very brown face and very white teeth was sitting on a reed mat carving a gourd, and the clothing which he wore would scarcely have sufficed to bandage a cut finger.

But the principal thing about him was his stare.

If Mrs. Clayton had been present she would have said that her son was a "sight." The slime of the morass was upon him; his blouse was bedraggled and in tatters. But whenever I think of him, I think of him as he looked to them, as he alighted from his donkey in the full gaiety of triumph with the spirit of the great celebration upon him.

He knew how he meant to do this thing and he was master of the situation.

"Don Nicuesarro," said he in the broad "Spiggoty," "I make you greeting. We come the couriers to Don Nicuesarro. Uncle Sam and Don Nicuesarro much friends!"

He extended his hand with all the pomp and graciousness of a true hidalgo and little Nicuesarro came forward hesitatingly and took it. His parents stood in the doorway amazed, but smiling at the unprecedented scene.

"Uncle Sam him make big promise. Him always speak truth. He send greeting and presents to Don Nicuesarro. Uncle Sam him feel much good and happy. He open him big Canal today and say him great waters flow together. Whatever Uncle Sam say, *he do!*"

Catching his companion's spirit, Warren hauled out from a duffle-bag the Stars and Stripes and formally tendered it to little Nicuesarro.

"Uncle Sam, him 'Merican—Nicuesarro, he San Blas. Uncle Sam he send his flag to Nicuesarro and the plates, just as it was said, the plates that will talk and sing his great song."

They brought out the motion-picture

machine and the box with the "bright devil" in it, and a dozen other things and the phonograph whose magic "plate" sang the great song of Uncle Sam. Little Nic's monkey advanced cautiously and perched on his master's shoulder and listened to the "Star-Spangled Banner" and was greatly edified.

Far off along the line of the Canal the Bas Obispo Band was playing the "Star-Spangled Banner" to cheering throngs. But the "Star-Spangled Banner" is the "Star-Spangled Banner" no matter where you play it or listen to it, and if Uncle Sam felt joyous and triumphant that day and evening, he had good reason for it; for he was not discredited.

There was a movie show up Mendoza Trail that night, and other plates talked and sang, and Uncle Sam's good friend was entertained in royal fashion. And little Nicuesarro came to realize more fully what a marvelous wizard "Uncle-sam" was, and truthful (which all wizards are not), and rich and powerful beyond the dreams of avarice. Little Nicuesarro knew all this.

What he did not know was that these two strange, happy-faced couriers who disappeared into the jungle the next morning had not so much as fifty cents between them. He did not know that the savings which might have gone for pleasure and for the glory of the great wizard on his gala day, had been gaily squandered for just plain, everyday phonograph records.

Yet who shall say the money did not go for the glory of Uncle Sam? Who shall say it was not spent in pleasure?

The Scouts are queer fellows, from all I can see; they find pleasure where some find pain; and they have their own way of looking at things.

Another thing about them is that you can't always put your finger on a Scout's motive. Warren Archer always stoutly maintained that he did this thing just to have the laugh on "Van Auken and that bunch."

Warren was not disappointed. The very next day he and LeRoy ran into the Van Auken crowd in Cathedral Plaza.

"That was a pretty good stunt," said Van Auken, "but little What's-his-name will be still waiting for the plates that talk and sing, I guess."

"No, we took him those," said LeRoy.

"Yes, you—didn't!"

"Sure. We took him some phonograph records," said Warren.

There was a moment's silence.

"Well—I'll—be——" began Fred. But out of the laughter which followed arose the voice of Harry Morse, who was a Scout and didn't know it.

"We're not going to let you fellows get away with that," said he. "This is on us. What do you say, fellows?"

The very next day they took up a collection and refunded to LeRoy and Warren forty-three dollars "Spiggoty," that being, as Van Auken cheerfully put it, "the high cost of jollying."

"How do you join the Scouts, anyway?" said he.

"Oh, that's easy," said LeRoy; "first you have to take off your shoe and kick a coconut across Culebra Cut. That makes you a tenderfoot. Then you have to track an extinct mosquito up Curucuchia Slide while it's in motion, and that lets you pass the tracking test. Then you have to roll a plate that can sing——"

"Tell me straight, will you?" laughed Van Auken. "I want to join."

LeRoy was not half bad as a jollier.

But just as I said, a Scout has his own ideas about jollying.

And there you are!

Uncle Sam's Big Ditch

BY WILLIAM JOSEPH SHOWALTER

IN the year 1915 the American people celebrated officially the completion of the greatest engineering undertaking in the whole history of the world —the Panama Canal.

It was an undertaking so vast that it is hard for anyone to comprehend its magnitude. Think of the task of digging a ditch sixty miles long, forty feet deep and as wide as a city block; or a well nine feet high, six feet thick, and stretching around the earth at the equator; or of a train of cars belting the earth four times around its greatest diameter, and requiring a string of engines reaching from New York to Honolulu to haul it. Those figures give some idea of the amount of material that came out of the ditch or went into the controlling works.

Or take the average monthly pay day. It was my good fortune to see the force paid off in 1908 and again in 1912. It took twenty-four tons of silver and sixteen hundred pounds of gold to pay off the men behind the shovels.

Or again, take the commissary—9,000,000 pounds of meat and 5,000,000 loaves of bread, with other things in proportion, were required annually to provender the canal army. The commissary ice cream plant annually froze nearly 150,000 gallons of ice cream, and nearly 5,000,000 pieces of linen went through the commission laundry.

To see and know the canal and what it means, let us take an imaginary trip through it. I'll be the guide.

Sailing down the Spanish main, where Morgan and his buccaneers lived their pirate lives, let us first examine our maps to see just where the canal is located. The first surprise is that it is due south of Pittsburgh. The second surprise is that a line drawn north and south through it would leave all of South America to the east except a very small portion of Ecuador and Peru. The third surprise is that, paradoxical as it may sound, the Atlantic end is twenty-three miles west of the Pacific end. When we arrive on the Isthmus we will find the sun rising in the Pacific and setting in the Atlantic. At the point where the canal crosses the isthmus, the South American side is further north than the North American side. And here is another striking geographical fact: When you leave the Pacific end of the canal for San Francisco you have to sail nearly a hundred and fifty miles almost due south before you can start northwestward toward 'Frisco.

Arriving at Panama we come first to the Port of Colon. On our starboard side we see a great breakwater built out from Toro Point. This breakwater is about two miles long, and on the seaward end there is a powerful lighthouse. Great stones weighing from eight to twenty tons

Panama—The World's Biggest Ditch

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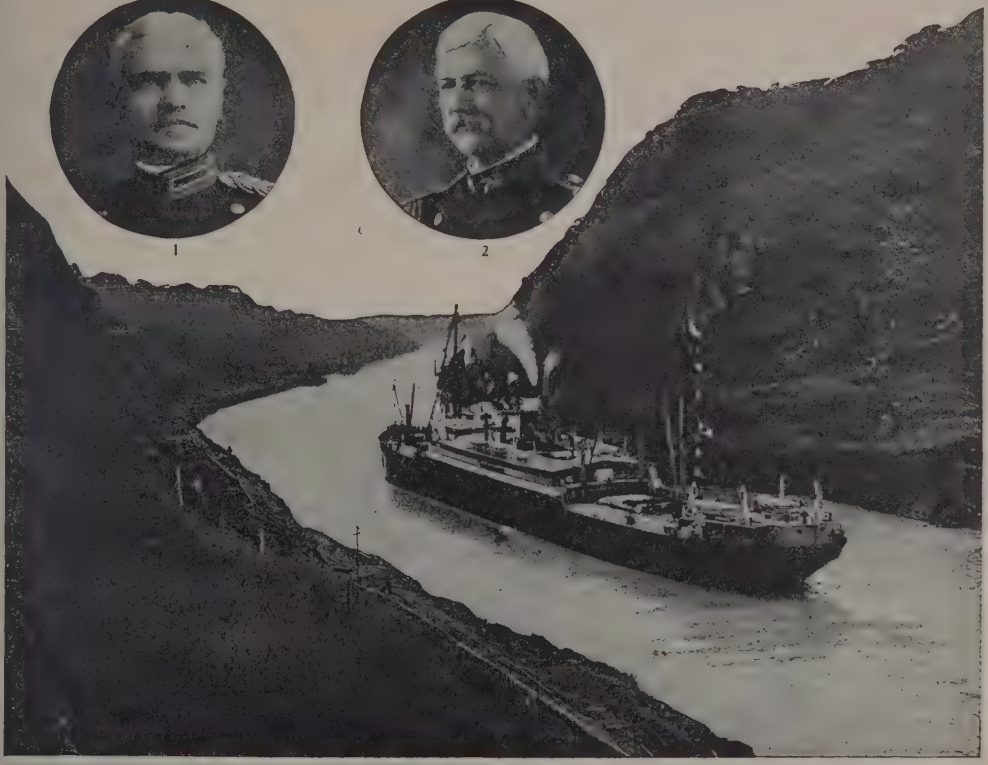


Above—(1) Col. Goethals, the Canal Builder. (2) Col. Gorgas, who drove yellow fever from the "Zone." *Photographs by Harris & Ewing.*

A steamship passing the Cucaracha Slide in the Panama Canal.

Below—The Miraflores Locks—"Where we are given two lifts downward that bring us to sea level again."

Pedro Miguel Locks—here, by turning a switch, the operator can send water to the Pacific or the Atlantic.

The three photographs here reproduced were supplied by the Panama Canal Commission.

A Boy Scout Is Useful

"A Scout is Kind," says Scout Law No. 6

In the upper corner we see Scouts tacking suet to trees for starving birds. Below that, a Scout carrying a Christmas dinner to a poor family. Directly above is a Scout befriending a thirsty horse. Below is a group of Pittsburg Scouts helping in a great "Walk-Rite" campaign.

are in place on the breakwater from end to end to keep the great sea gales from washing it away. On our port side there is another, but shorter breakwater. The opening between them of a thousand feet or so permits the passage of ships.

Near the other ends of the two breakwaters are the fortifications of Toro Point and Margarita Island. The big 14-inch disappearing rifles, two at each place, will carry a shell weighing 1,400 pounds at a velocity that will drive it through five feet of wrought iron at point blank range.

The sixteen 12-inch mortars have a range of nearly four miles.

When we come inside of the breakwaters we are in the canal channel several miles before we come to the shore line, for the bay was shallow and an underwater channel had to be dredged for some distance. This work was done by a giant seagoing suction dredge, with great twenty-inch pipes that sucked up mud as readily as a vacuum cleaner sucks up dust. The pipes were let down at a gentle angle, and a great comb on the end raked loose the soft earth. The giant centrifugal pumps sucked the mud-laden water up into the hold of the ship, the water draining off again and leaving the mud behind. The dredge traveled back and forth until it was full of mud to the scuppers, and then steamed out to sea and dumped its load through doors in the bottoms of the mud bins. The wonderful suction force of these dredges is shown by the fact that they would pick up pieces of anchor chain, cannon-balls, or anything that came their way.

We now drop anchor at the port works at the Atlantic side. Here is a third breakwater, or mole, made to afford a safe roadstead for ships calling at the Atlantic side. There is a great coaling plant soon to be put into operation, with a capacity of 150,000 two-horse loads of coal. Allowing thirty feet to the team, it would take a procession of coal wagons nearly 900 miles long to fill the plant. It can put 1,000 wagonloads of coal in a ship in an hour, or take 500 wagonloads out. Here, also, is a great bakery, a laundry that can do a ship's family wash and have it waiting at the other end of the canal before the ship gets through. Then there are great storehouses where anything from a paper of pins to an anchor or a propeller shaft may be furnished.

After we have paid our toll, which is $1.20 for every hundred cubic feet of freight- and passenger-carrying space in our ship, we are ready to proceed through the canal. They call a hundred cubic feet of space a net register ton. If it be filled with baby carriages or sewing machines, it may not hold a ton in weight. On the other hand, if it is filled with wheat it will hold about two and a half tons. A 10,000-ton ship has to pay $12,000 for passing through the canal. Quite a little bit of toll? Yes, but if she had gone around Cape Horn she would have had $1,000 a day added to her expense account for the thirty-odd days extra it takes to sail the around-South-America route. Figure it out yourself. It costs about ten cents a ton per day to keep a ship on the sea, and the distance saved between New York and San Francisco is around 7,000 knots, which the ship covered at the rate of from ten to twelve knots an hour.

With our tolls paid, our bunkers filled with coal, our laundry put off, etc., we are now ready for our trip through the canal itself. We find ourselves starting inland through a channel 500 feet wide, dug out so that the sea could find its way in to Gatun. It is only a few miles up

to Gatun—and by the way, you pronounce it Gattoon.

When we get there we find ourselves at the bottom of a great stair. They are only three in number, but those three steps lift us up a distance of eighty-five feet, out of the sea into Gatun Lake. The steps are divided so that you go up on one side and come down on the other.

When we come to the lower step we find a great chain stretched across our path to make sure that we do not go too far. If our ship does not stop it will ram its nose into the chain, which will slowly yield through an automatic paying-out arrangement, until it brings us to a dead stop. The links of this chain are made of 3-inch iron.

Once we are stopped an officer of the canal comes aboard and locks every lever in the engine-room of our ship. Then four towing locomotives take hold of us with their long hawsers, two on either wall of the lock, one of them before and the other aft. While they are getting ready the man who operates the locks sits up in his little tower and moves lever after lever. He has a little lock model before him and it does exactly the same as the big locks. If he opens a gate in the big lock the same gate in his little lock goes open, and so on. And he cannot move the wrong lever, for they are so constructed that each one can be moved only in its turn.

He now opens the two lower gates. Each gate is made up of two great structural steel doors, which close across the canal in the shape of a flattened V, whose apex points in the direction that pressure is to be encountered. Each of these great doors is 65 feet wide, 7 feet thick and from 47 to 82 feet long. They weigh from 300 to 600 tons each, and are opened and closed entirely by electrical machinery.

We pass through the lower gates and they are closed behind us. Great valves are then opened in the huge culverts that lead down through the lock walls, which are large enough to admit an express train. From these great culverts others large enough to accommodate a dray wagon run under the floor of the lock. Connected with these are dozens of vast openings in the floor, each large enough to pass a sugar barrel through. The water is admitted into the big culverts and from them into the smaller ones, out of which it rises into the lock through the openings in the floor. Put a chip in a tin can in whose bottom you have made a lot of holes. Set it in the bath tub and draw water into the tub. As the water runs into the can the chip rises up. The lifting of a ship at Panama involves the same general principle.

After the lifting process goes on until we are on the level of the water in the next lock above, the gates ahead of us are opened, and we are towed into that lock. Again the gates behind us are closed, more water is let down from the lake above, and we get another boost of 28 1/3 feet upward. Once more the operation is repeated, and we now find ourselves on the level of the lake. We are towed out into the forebay, the towing engines make loose their hawsers, the canal official unlocks the levers in the engine room, and we are ready for our sail across Gatun Lake and through Culebra Cut.

But before we start across the lake, let us look around a little. The locks we have passed through, together with their companions on the two sides of the Isthmus, required enough cement in their construction to build a row of houses half way from New York to Chicago. They have room in them to accommodate a

ship nearly a fifth of a mile long and 110 feet in the waistline.

It was a great sight to see them under construction. Great structural steel towers were erected on the two sides of the lock site, and they were connected by heavy cables. A battery of giant concrete mixers were fed by a little circular-track electric railroad. It had a twenty-four-inch gauge, and its little electric cars ran without motormen, each car being stopped or started by a switch. Whether going up hill or down, running under load or empty, they automatically regulated their speed so that they didn't vary more than ten per cent. What boy could tell within ten per cent. how fast he was running? The cars ran into a little tunnel where they got their properly proportioned loads of stone, sand and cement, and then ran to the mixer house where they dumped their burdens into the mixer.

After the mixer had rolled its portion of stone, cement and sand, with a proper amount of water added, around in its maw for a sufficient time, another little train pulled up alongside, bearing two big buckets. Into these two buckets two mixers deposited their "mixins," which was now concrete.

This little train had a tiny electric engine, run with a third rail hitched to it. As soon as the two big buckets were full, off it ran to a point under the great cableways which stretched between the big towers. From this cableway came down two empty buckets, which were set in their places on the car. The loaded buckets were then taken up and carried across on the cable to the part of the lock which it was to be put into.

Wonderful Gatun Dam! We must not fail to inspect it. It is a great artificial hill thrown across the Chagres River Valley so as to dam back the waters of the Chagres and to convert that river into a lake through its middle course, and so as to make it carry ships across the continental divide. This dam covers about 288 acres, and its height is 108 feet. Its slope, however, is so gentle that if you take a yardstick and elevate one end four inches higher than the other you will have a greater slope than the average of Gatun Dam.

The waters it impounds have a surface of 164 square miles. The lake thus formed reminds one somewhat of a kidney bean with a sprout, Culebra Cut representing the sprout. Sailing up through this greatest artificial lake in the world we see here and there islands, and finally we come to Gamboa. The barnacles that have caught onto our ship in its thousands of miles of ski-hooting through the brine do not like the fresh water a bit, and so, one by one, they sicken, loosen their hold, and drop off to die on the floor of the lake.

When we reach Gamboa, which is about twenty-three miles above Gatun, we get to the starting point of Culebra Cut. Ahead of us lies the most wonderful ditch ever dug. At places it is a third of a mile wide at the top. It is nine miles long, and at places its sides tower five hundred feet above us.

Out of this great cut there came 105,000,000 cubic yards of material. Try your arithmetic and figure out what that means. A ditch deep enough to float the *Mauretania* would probably need to be 13 yards deep and 40 yards wide. That would be 520 cubic yards for every linear yard. Divide that into 105,000,000 yards and reduce it to miles, and you will find that it would make a ditch reaching from Washington, D. C., to Richmond, Va.

The way they broke that old backbone of the vast mountain chain that stretches from the Arctic Ocean to the Straits of Magellan was a wonder. They used well drills of the largest type to drill the holes for the big blasts, while hundreds of tripod drills were continually in operation. They drilled nearly a thousand miles of holes annually and fired about six hundred holes a day. When the work was at its height they used nearly 10,000 two-horse wagonloads of dynamite in three years, with a loss of only eight men in all that time.

There were seventy-five trains constantly engaged in hauling away the spoil, and about 3,700 carloads of dirt and rock went out of the cut every day. One of the big shovels could pick up ten tons of rock at a single mouthful and keep that up all day long. There were unloaders that could unload a twenty-one car train, containing some eight hundred tons of spoil, in ten minutes; spreaders that could take the place of a hundred men in pushing the spoil down the bank after it was unloaded and track shifters with which a dozen men could do the work of several hundred.

The slides in Culebra Cut were a terrible obstacle. In the evening you might ride through it and think it was almost ready for the water to be turned in; next morning a great avalanche of earth would be found down in the cut, covering steam shovels, hiding railroad tracks and breaking up plans in general. About 250 acres of land, with its trees and rocks and buildings, slid or broke loose into the cut, and if it had not been for them Colonel Goethals would have let me take you on this in fancy trip through the canal in 1912 instead of 1915.

Once we get through the great cañon which we call Culebra Cut we come, still sailing on the waters of the Chagres River impounded in Gatun Lake, to Pedro Miguel—Father Michael, we would call it in English. Here, by the turning of a single switch, the lock operator can determine whether the water of the Chagres may flow into the Pacific or whether it will have to look to the Atlantic for an outlet. As we look back over our lake journey we will understand that the builders of the canal raised the waters up to meet the ditch half way; the ditch would have had to be eighty-five feet deeper if the waters of the Chagres had not been dammed back to that height. Therefore, Gatun Lake is, figuratively speaking, a great water trestle that gives ships a level ride across the continental divide.

Arriving at Pedro Miguel—Padro Megeel you should call it—we are ready to be lifted down to ocean level again. The locks there lift us down one step. A chain duplicating the one we met at Gatun stretches across our pathway. A canal official comes aboard and locks our engine levers again, the towing engines make fast to us, the chain goes down, the gates go open, and we are towed into the lock. Then the gates are closed behind us.

Now the water operation is reversed. Instead of flowing into the lock from the lake above, the culverts to the lake are closed and the valves to the forebay below are opened. This permits the water to run down through the floor of the lock and out through the culverts until it reaches the level of the water outside the gates. Then the gates are opened, and we are towed out into Miraflores Lake. This is a small body of water, and leads to the Miraflores Locks, where we are given two lifts downward that bring us to sea level again.

A few miles through a low marshy plain, with a channel five hundred feet wide, brings us down to a point where Ancon Hill, the beautiful Hotel Tivoli, the large Administration Building, and the superbly situated Ancon Hospital look down upon us. A little further and we come to what was once the floor of the great Ancon Rock quarry but which is now a parade ground for the military. And nearby are the new towns that house the employees of the permanent works and the great machine shops and drydocks and freight terminals. A little further on we see the great peninsula made with material from Culebra Cut, now built up with houses for the common labor at the one side and barracks for some of the military at the other.

A long embankment stretches out into the bay for a distance of nearly four miles, and unites Pericio, Flamenco and Naos Islands with the mainland. On these islands are the great fortifications that protect the Pacific entrance to the canal. One of the guns is the huge sixteen-inch rifle built at Watervliet Arsenal. It hurls a projectile weighing more than a ton a distance of seventeen miles.

We have now passed hurriedly through the canal. Let us go back a little while I tell you something of the great men who built it. First and foremost of them all is Colonel George W. Goethals, the master builder.

Boys, let me tell you he certainly is a good scout.

I have visited him on the isthmus upon four different occasions, and go to see him every time he comes to Washington, and, believe me, if there ever was a great man who didn't have a single frill or furbelow, his name is Goethals. He doesn't have time to put on any lugs. And he is as backward as a schoolboy when it comes to public speaking. I have seen him almost forget his piece. But when it came to work, let me tell you that he was there with all four feet. He had over 40,000 men under him, and he did not ask a single one of them to work as hard as he did.

When a man worked hard he hadn't a better friend in the world than "The Colonel." If he was inclined to shirk he would be told about it and given a chance to pull himself together, but if he did not improve his chance that was the end of him. Colonel Goethals loved justice so strongly that he spent every Sunday morning hearing the complaints of his men and trying to see that justice was done to every man on the Isthmus, white or black, high or low. He believed that he was in duty bound to spend Uncle Sam's money just as carefully as he would his own, and his doctrine always was that you save dollars by looking after cents.

It did a fellow a lot of good to see this giant among men at his work. No man ever faced a sterner task or a greater undertaking. Yet through it all he worked along with an air of ease and lack of exertion that astounded the men who knew of the magnitude of his job. Where two of America's greatest engineers failed, he succeeded. Yet he was always the soul of generosity and the incarnation of liberality in giving them credit for what they did.

The American people cannot overestimate their debt to Colonel Goethals. But for the wonderful efficiency he put into his canal army we might have spent twice as much for our canal as it cost, and we might have begun operating it in 1925 instead of 1915. The canal he built is great, the greatest single piece of construction work in all history, and yet it is

not one whit greater than this plain, easy-as-an-old-shoe, honest-to-the-core man who lives by his deeds and not by his words. Were I asked who, of all the men I have ever met, I would recommend as a model for Boy Scouts, I would say Colonel Goethals.

Another great man was Colonel Gorgas. He's the man who fought the mosquito to a finish and pulled his teeth, so to speak.

You know for centuries people had been having yellow fever and they could not tell for the life of them how they got it. Finally three army surgeons, Reed, Carroll and Lazear, proved that Mrs. Stegomyia Mosquito gave it to people. They first proved that you couldn't get it without her biting you. Then they proved that when she bites you after having bitten someone who had yellow fever, she gives it to you. It's a debatable question whether she gives people yellow fever or whether people give it to her. She cannot get the yellow-fever germ into her body without biting a yellow-fever patient, and once she gets it down into her little "tummy" it begins to eat its way through her "innards" until it gets up to her bill; and when she bites somebody else, that germ is there right ready to hop out into that person's blood.

After all this was proved Colonel Gorgas was assigned to the task of applying the lesson learned in Cuba. He did so well that he was later given the task of getting the yellow fever out of the systems of the lady Stegomyia at Panama—for the gentleman Stegomyias don't bite people and therefore don't get yellow-fever germs.

He set to work, shut mosquitoes out of the houses with screens, killed them out everywhere by fumigation and oiling mosquito-bearing waters, forbade the people to leave anything set around the house that might catch rain water, began giving people quinine by the wholesale to protect them against malaria, and set up a quarantine at the ports that kept out everybody who had stood a chance of forming an unwilling acquaintance at any recent time with Mrs. Stegomyia or any of her brood. It was not long until a tropical pest hole was converted into a national park reaching across the Isthmus, and disease had to take to the jungle.

I could go on with this story by the page, telling you of the little naked negroes that played around the native villages, of the Martinique negroes who had never seen a wheelbarrow and carried it on their heads instead of wheeling it, of the old woman who got a letter from the postoffice, laid it on her head, weighted it down with a stone, and then went her way, and a hundred other things. But you will want to see some of it yourselves in the days when your good records as Scouts may lead your path that way.

How I Learned to Fly

BY ORVILLE WRIGHT

AS TOLD BY HIM TO LESLIE W. QUIRK

The Wright Brothers! The mere mention of their names should cause a thrill in the breast of every boy in America, for, as the editor of the "Outlook" said in June, 1912, soon after the death of Wilbur Wright, the elder brother: "There is no more brilliant chapter in the record of American invention—long and noble as that record is—than that which tells of their marvelous conquest of the air."

The story of the work of these men inevitably reminds one of the work of such famous inventors as Samuel Morse and Robert Fulton. There was nothing accidental in their success. It was accomplished by careful, persistent, intelligent, painstaking work. They went at it in a businesslike way and mastered, one by one, the thousands of complicated and annoying problems which it presented.

Such a method of careful, scientific work was certain to bring results. That is the reason why the Wright brothers knew before they tried it that their machine would fly.

And combined with these methods was a legitimate caution which kept them from taking foolish chances. If the Wright boys had been as reckless as many of their followers who have lost their lives doing "stunts" in the air, the aeroplane even now might not be a reality, for the inventors would have lost their lives before it was perfected."

It is an unusual opportunity that is being presented to our readers to have Orville Wright tell them, through Mr. Quirk, the remarkable story of just how he and his brother went about it to conquer the air. He tells it in such a way that the reader cannot but believe that careful work will accomplish almost any result.—The Editor.

I SUPPOSE my brother and I always wanted to fly. Every youngster wants to, doesn't he? But it was not till we were out of school that the ambition took definite form.

We had read a good deal on the subject, and we had studied Lilienthal's tables of figures with awe. Then one day, as it were, we said to each other: "Why not? Here are scientific calculations, based upon actual tests, to show us the sustaining powers of planes. We can spare a few weeks each year. Suppose, instead of going off somewhere to loaf, we put in our vacations building and flying gliders." I don't believe we dared think beyond gliders at that time—not aloud, at least.

That year—it was 1900—we went down to North Carolina, near Kitty Hawk. There were hills there in plenty, and not too many people about to scoff. Building that first glider was the best fun we'd ever had, too, despite the fact that we put it together as accurately as a watchmaker assembles and adjusts his finest timepeice. You see, we knew how to work because Lilienthal had made his tables years before, and men like Chanute, for example, had verified them.

To our great disappointment, however, the glider was not the success we had expected. It didn't behave as the figures on which it was constructed vouched that it should. Something was wrong. We

looked at each other silently, and at the machine, and at the mass of figures compiled by Lilienthal. Then we proved up on them to see if we had slipped somewhere. If we had, we couldn't find the error; so we packed up and went home. We were agreed that we hadn't built our glider according to the scientific specifications. But there was another year coming and we weren't discouraged. We had just begun.

We wrote to Chanute, who was an engineer in Chicago at the time. We told him about our glider; we drew sketches of it for him; we set down long rows of figures. And then we wound up our letter by begging him to explain why the tables of Lilienthal, which he had verified by experiments of his own, could not be proved by our machine.

Chanute didn't know. He wrote back it might be due to a different curve or pitch of surface on the planes, or something like that. But he was interested just the same, and when we went down to Kitty Hawk in 1901 we invited him to visit our camp.

Chanute came. Just before he left Chicago, I recall his telling us, he had read and O. K.'d the proofs of an article on aeronautics which he had prepared for the Encyclopedia Britannica, and in which he again told us of verifying Lilienthal's tables.

Well, he came to Kitty Hawk, and after he had looked our glider over carefully he said frankly that the trouble was not with any errors of construction in our machine. And right then all of us, I suspect, began to lose faith in Lilienthal and his gospel figures.

We had made a few flights the first year, and we made about 700 in 1901. Then we went back to Dayton to begin all over. It was like groping in the dark. Lilienthal's figures were not to be relied upon. Nobody else had done any scientific experimenting along these lines. Worst of all, we did not have money enough to build our glider with various types and sizes of planes or wings, simply to determine, in actual practice, which was the best. There was only the alternative of working out tables of our own. So we set to work along this line.

We took little bits of metal and we fashioned planes from them. I've still a deskful in my office in Dayton. There are flat ones, concave ones, convex ones, square ones, oblong ones and scores and scores of other shapes and sizes. Each model contains six square inches. When we built our third glider the following year, ignoring Lilienthal altogether and constructing it from our own figures, we made the planes just 7,200 times the size of those little metal models back at Dayton.

It was hard work, of course, to get our figures right; to achieve the plane giving the greatest efficiency—and to know before we built that plane the exact proportion of efficiency we could expect. Of course, there were some books on the subject that were helpful. We went to the Dayton libraries and read what we could find there; afterwards, when we had reached the same ends by months and months of study and experiment, we heard of other books that would have smoothed the way.

But those metal models told us how to build. By this time, too, Chanute was convinced that Lilienthal's tables were obsolete or inaccurate, and was wishing his utmost that he was not on record in an encyclopedia as verifying them.

During 1902 we made upward of 1,400 flights, sometimes going up a hundred

times or more in a single day. Our runway was short, and it required a wind with a velocity of at least twelve miles an hour to lift the machine. I recall sitting in it, ready to cast off, one still day when the breeze seemed approaching. It came presently, rippling the daisies in the field, and just as it reached me I started the glider on the runway. But the innocent-appearing breeze was a whirlwind. It jerked the front of the machine sharply upward. I tilted my rudder to descend. Then the breeze spun downward, driving the glider to the ground with a tremendous shock and spinning me out headfirst. That's just a sample of what we had to learn about air currents; nobody had ever heard of "holes" in the air at that time. We had to go ahead and discover everything for ourselves.

But we glided successfully that summer, and we began to dream of greater things. Moreover, we aided Chanute to discover the errors in Lilienthal's tables, which were due to experimental flights down a hill with a descent so acute that the wind swept up its side and out from its surface with false buoying power. On the proper incline, which would be one parallel with the flight of the machine, the tables would not work out. Chanute wrote the article on aeronautics for the last edition of that encyclopedia again, but he corrected his figures this time.

The next step, of course, was the natural one of installing an engine. Others were experiments, and it now became a question of which would be the first to fly with an engine. But we felt reasonably secure, because we had worked out all our own figures, and the others were still guessing or depending upon Lilienthal's or somebody's else that were inaccurate. Chanute knew we expected to try sustained flights later on, and while abroad that year mentioned the fact, so we had competition across the water, too.

We wrote to a number of automobile manufacturers about an engine. We demanded an eight-horse one of not over 200 pounds in weight. This was allowing twenty-five pounds to each horsepower, and did not seem to us prohibitive.

Several answers came. Some of the manufacturers politely declined to consider the building of such an engine; the gasoline motor was comparatively new then, and they were having trouble enough with standard sizes. Some said it couldn't be built according to our specifications, which was amusing, because lighter engines of greater power had already been used. Some seemed to think we were demented—"Building a flying machine, eh?" But one concern, of which we had never heard, said it could turn out a motor such as we wanted, and forwarded us figures. We were suspicious of figures by this time, and we doubted this concern's ability to get the horsepower claimed, considering the bore of the cylinders, etc. Later, I may add, we discovered that such an engine was capable of giving much greater horsepower. But we didn't know that at the time; we had to learn our A, B, C's as we went along.

Finally, though, we had a motor built. We had discovered that we could allow much more weight than we had planned at first, and in the end the getting of the engine became comparatively simple. The next step was to figure out what we wanted in the way of a screw propeller.

We turned to our books again. All the figures available dealt with the marine propeller—the thrust of the screw against the water. We had only turned from the solution of one problem to the intricacies of another. And the more we experi-

mented with our models the more complicated it became.

There was the size to be considered. There was the material to be decided. There was the matter of the number of blades. There was the delicate question of the pitch of the blades. And then, after we had made headway with these problems, we began to scent new difficulties. One pitch and one force applied to the thrust against still air; what about the suction, and the air in motion, and the vacuum, and the thousand and one changing conditions? They were trying out the turbine engines on the big ocean liners at that time, with an idea of determining the efficiency of this type. The results were amazing in the exact percentage of efficiency developed by fuel and engine and propeller combined. A little above 40 per cent. efficiency was considered wonderful. And the best we could do, after months and months of experimenting and studying, was to conceive and build a propeller that had to deliver 66 per cent. of efficiency, or fail us altogether. But we went down to Kitty Hawk pretty confident, just the same.

There were the usual vexatious delays. But finally, in December, 1903, we were ready to make the first flight. My brother and I flipped a coin for the privilege of being the first to attempt a sustained flight in the air. Up to now, of course, we had merely taken turns. But this was a much bigger thing. He won.

The initial attempt was not a success. The machine fluttered for about one hundred feet down the side of the hill, pretty much as gliders had done. Then it settled with a thud, snapping off the propeller shaft, and thus effectually ending any further experiments for the time being.

It was getting late in the fall. Already the gales off Hatteras were beginning to howl. So I went back to Dayton personally to get a new shaft, and to hurry along the work as rapidly as I could.

It was finished at last. As I went to the train that morning, I heard for the first time of the machine constructed by Langley, which had dropped into a river the day before. You see, others were working just as desperately as we were to perfect a flying machine.

We adjusted the new shaft as soon as I reached Kitty Hawk. By the time we had finished it was late in the afternoon, with a stiff wind blowing. Our facilities for handling the machine were of the crudest. In the past, with our gliders, we had depended largely upon the help of some men from a life saving station, a mile or two away. As none of them happened to be at our camp that afternoon, we decided to postpone the next trial till morning.

It was cold that night. A man named Brinkley—W. C. Brinkley—dropped in to warm himself. He was buying salvage on one or more of the ships that had sunk during a recent storm that raged outside Kitty Hawk Point. I remember his looking curiously at the great frame-work, with its engine and canvas wings, and asking "What's that?" We told him it was a flying machine which we were going to try out the next morning, and asked him if he thought it would be a success. He looked out toward the ocean, which was getting rough and which was battering the sunken ships in which he was interested. Then he said, "Well, you never can tell what will happen—if conditions are favorable." Nevertheless, he asked permission to stay overnight and watch the attempted flight.

Morning brought with it a twenty seven-mile gale. Our instruments, which were more delicate and more accurate than the Government's, made it a little over

twenty-four; but the official reading by the United States was twenty-seven miles an hour. As soon as it was light we ran up our signal flag for help from the life saving station. Three men were off duty that day, and came pounding over to camp. They were John T. Daniels, A. D. Etheridge and W. S. Daugh. Before we were ready to make the flight a small boy of about thirteen or fourteen came walking past.

Daniels, who was a good deal of a joker, greeted him. The boy said his name was Johnny Moore, and was just strolling by. But he couldn't get his eyes off the machine that we had anchored in a sheltered place. He wanted to know what it was.

"Why, that's a duck-snarer," explained Daniels soberly. North Carolina, of course, is noted for its duck shooting. "You see, this man is going up in the air over a bay where there are hundreds of ducks on the water. When he is just over them, he will drop a big net and snare every last one. If you'll stick around a bit, Johnny, you can have a few ducks to take home."

So Johnny Moore was also a witness of our flights that day. I do not know whether the lack of any ducks to take away with him was a disappointment or not, but I suspect he did not feel compensated by what he saw.

The usual visitors did not come to watch us that day. Nobody imagined we would attempt a flight in such weather, for it was not only blowing hard, but it was also very cold. But just that fact, coupled with the knowledge that winter and its gales would be on top of us almost any time now, made us decide not to postpone the attempt any longer.

My brother climbed into the machine. The motor was started. With a short dash down the runway, the machine lifted into the air and was flying. It was only a flight of twelve seconds, and it was an uncertain, wavy, creeping sort of a flight at best; but it was a real flight at last and not a glide.

Then it was my turn. I had learned a little from watching my brother, but I found the machine pointing upward and downward in jerky undulations. This erratic course was due in part to my utter lack of experience in controlling a flying machine and in part to a new system of controls we had adopted, whereby a slight touch accomplished what a hard jerk or tug made necessary in the past. Naturally, I overdid everything. But I flew for about the same time my brother had flown.

He tried it again, the minute the men had carried it back to the runway, and added perhaps three or four seconds to the records we had just made. Then, after a few secondary adjustments, I took my seat for the second time. By now I had learned something about the controls, and about how a machine acted during a sustained flight, and I managed to keep in the air for fifty-seven seconds. I couldn't turn, of course—the hills wouldn't permit that—but I had no very great difficulty in handling it. When I came down I was eager to have another turn.

But it was getting late now, and we decided to postpone further trials until the next day. The wind had quieted, but it was very cold. In fact, it had been necessary for us to warm ourselves between each flight. Now we carried the machine back to a point near the camp, and stepped back to discuss what had happened.

My brother and I were not excited nor particularly exultant. We had been the first to fly successfully with a machine driven by an engine, but we had expected

to be the first. We had known, down in our hearts, that the machine would fly just as it did. The proof was not astonishing to us. We were simply glad, that's all.

But the men from the life saving station were very excited. Brinkley appeared dazed. Johnny Moore took our flights as a matter of course, and was presumably disappointed because we had snared no ducks.

And then, quite without warning, a puff of wind caught the forward part of the machine and began to tip it. We all rushed forward, but only Daniels was at the front. He caught the plane and clung desperately to it, as though thoroughly aware as were we of the danger of an upset of the frail thing of rods and wings. Upward and upward it lifted, with Daniels clinging to the plane to ballast it. Then, with a convulsive shudder, it tipped backward, dashing the man in against the engine, in a great tangle of cloth and wood and metal. As it turned over, I caught a last glimpse of his legs kicking frantically over the plane's edge. I'll confess I never expected to see him alive again.

But he did not even break a bone, although he was bruised from head to foot. When the machine had been pinned down at last, it was almost a complete wreck, necessitating many new parts and days and days of rebuilding. Winter was fairly on top of us, with Christmas only a few days off. We could do no more experimenting that year.

After all, though, it did not matter much. We could build better and stronger and more confidently another year. And we could go back home to Dayton and dream of time and distance and altitude records, and of machines for two or more passengers, and of the practical value of the heavier-than-air machine. For we had accomplished the ambition that stirred us as boys. We had learned to fly.

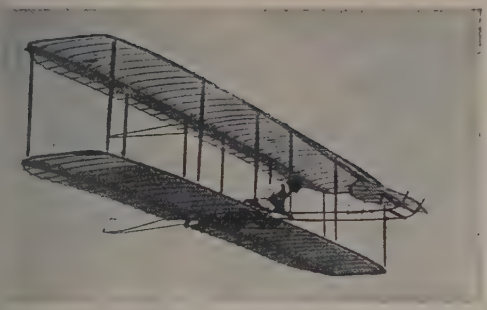
A Story of Apache Endurance

BY F. A. CROSBY

THE writer has lived among the Indians of the Southwest, and was in that region when Geronimo, the Apache chief, was being followed. Examples of Apache endurance are almost unbelievable.

Geronimo was on the warpath and scalping settlers along the Salt River Valley. Word must be sent without delay from the garrison at Fort Yuma to a detachment of cavalry one hundred miles to the northeast. The country was dry, rugged, and hot, as only portions of Arizona can be. No horse could do it, and there was no chance for relays. Only blind paths existed. A young friendly Apache, acting as a scout, volunteered to carry the message. Stripped to a loin cloth only, with a leather pouch of water on one side, and a pouch of jerked or dried venison on the other, he started from the fort at four o'clock in the morning afoot and alone, and arrived with the message at eight o'clock the same evening. He had covered on an Indian trot 103 miles over the roughest country, and much of the time with the thermometer at 100 degrees or over.

The Conquest of the Air



The Second Wright Glider

Mr. Orville Wright

The first flight with an engine, Dec. 17, 1903. Orville Wright at the wheel; Wilbur Wright alongside.

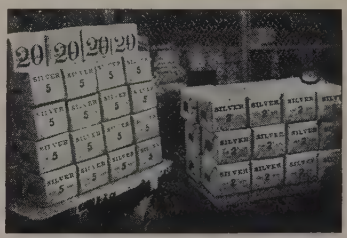
The Standard Wright Biplane of 1910

The Wright Racing Biplane of the Same Year

How Uncle Sam Handles Money

This Vault Contains $105,000,000 in Silver—Each Bag Contains about $1,000 and Weighs about 59 Pounds

When Money Is Unfit for Further Circulation It Is Cut up by this Machine.



View of Interior of Cash Vault, through which $3,000,000 Passes Every Day

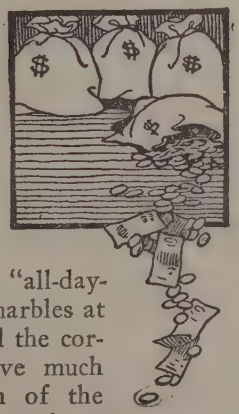
Boy Scouts Making Their First Deposits in a Postal Savings Bank

Money! Money!

Some Staggering Facts About Uncle Sam's Great Wealth

BY FRANK J. F. THIEL

SECRETARY TO THE TREASURER OF THE UNITED STATES



THE mysterious power of money is known to us all. What boy does not remember the time when he begged his mother or father for a penny or a nickel to buy an "all-day-sucker" or a bag of marbles at the little store around the corner? He never gave much thought to the form of the money itself, yet he knew it was necessary to have it before he could satisfy the longings of his heart.

In times gone by when people wanted to buy anything, dried fish, silk, tobacco, furs, rice, wheat, olive oil, wampum and many other articles served the purpose of money, but today in this country metal and paper are used almost altogether.

The paper used in the manufacture of United States currency is made by a private concern under Government contract. The process employed in manufacturing it is a secret one. The money is printed at the Bureau of Engraving and Printing and delivered to the Treasurer of the United States in the Treasury building every day in large wagons which are closely guarded. After it reaches the Treasurer's office it is placed in what is called the reserve vault, and thereafter when unfit or mutilated currency is destroyed a like amount of new money is taken from the reserve vault and placed in the cash vault. From the latter vault the new money is finally shipped to Subtreasuries, banks and others, and thus placed in circulation.

The output of currency of all denominations varies according to the country's needs, but at the present time the daily supply is 268,000 sheets of four notes each, or 1,072,000 notes. These notes cost the Government one and three-tenths of a cent apiece. There are eleven different denominations of United States paper currency issued at present, ranging from $1 to $10,000.

The money is put up in packages of 4,000 notes each, regardless of the denomination; so that while a package of 4,000 one dollar bills represents $4,000, a package of 4,000 $10,000 gold certificates is worth $40,000,000. I have held in my arms at one time $100,000,000 in $5,000 and $10,000 bills.

What Becomes of Worn-Out Bills

When old and worn United States paper currency is received at the Treasury for redemption it is turned over to the Redemption Division of the Treasurer's office. Here experts examine the notes to determine whether they are genuine or counterfeit. If counterfeit they are so

branded and destroyed. If genuine, they are strapped in packages to be canceled and destroyed by maceration.

After complete destruction the resulting pulp is rolled out in sheets about one inch thick, put in bales and sold to private parties under annual contract, and by them is manufactured into paper stock, souvenirs of Washington, etc. During the last year we received for redemption mutilated paper money having a value of $975,416,516.00.

People Who Use Their Stoves as Safes

There is an interesting fact developed every fall when the Treasurer's office receives fragments of burnt money which has been put in stoves for safekeeping during the warm weather and the hiding place forgotten until cold weather comes on, a fire is started and the awful discovery made only after partial damage has been done.

We receive on an average two thousand such cases every year, and the result is that packages come to us first from the colder sections of the country and then by degrees from more southern points, until we are able every year to pretty accurately trace the frost line from Canada to the Gulf. If there remain fragments sufficient for proper identification, the full redemption value may be had under reasonable regulations. For money totally destroyed, however, the Government can afford the owner no relief.

One Transaction $1,426,422,051.48 2-3

All the moneys of the Government are placed by Congress in the hands of the Treasurer of the United States, whose responsibilities are therefore very great indeed. When the present Treasurer took office he gave his predecessor a receipt for all moneys and securities turned over to him. This receipt called for $1,426,422,051.48 2-3, which is said to be the largest single financial transaction in the world's history.

The Two-Thirds of a Cent

The two-thirds of a cent has caused a great many people to remark that Uncle Sam must have bookkeeping down to a fine point of accuracy. A short time ago a man in Canada wrote the Treasurer a letter saying he had noticed that the Treasurer was carrying among his assets two-thirds of a cent, and he took pleasure in informing him that he had the other third!

As a matter of fact, this fraction of a cent is brought about by a bond of the state of Tennessee for $1,666.66 2-3. It is one of a lot of $335,000 of other bonds of the same State, which years ago belonged to the Indian Trust Fund, but now are the property of the United States Government.

All moneys in the Subtreasuries and all coin and bullion in the mints and assay offices are charged to the Treasurer. There are nine Subtreasuries, located in Boston, New York, Philadelphia, Baltimore, Cincinnati, Chicago, St. Louis, New Orleans and San Francisco. There are three mints, at Philadelphia, Denver and San Francisco, and nine assay offices, distributed between New York and Seattle.

120 *Carloads of Gold*

The total amount of money in this country on December 1, 1914, was $4,031,484,945. The money in circulation averaged $36.40 for every man, woman and child, estimating the continental population of the United States on December 1 at 99,733,000. The total amount of our gold was $1,817,121,700—about three

times as much as Great Britain has. It would require 120 cars of 60,000 pounds capacity each to carry this gold.

Our silver dollars amounted to $565,904,478, which if placed on top of each other would make a pile 835 miles in height; if placed edge to edge would make a string 13,500 miles in length; and which would require 555 freight cars of 60,000 pounds capacity to carry them.

In concluding this brief article I cannot refrain from presenting below in concrete form the great volume of cash transactions in the office of the Treasurer of the United States during the past three years:

1911	$6,382,303,750.59
1912	6,601,731,502.41
1913	7,071,520,498.25
Grand total	$20,055,555,751.25

It should be remembered that the above figures do not include checks, warrants, bonds, drafts, etc., handled in the ordinary course of business. In the matter of checks alone there are handled in this office between 10,000,000 and 12,000,000 a year, representing approximately $800,000,000 additional. These checks have been issued by nearly 3,000 Government disbursing officers, who have some 5,000 separate accounts with the Treasurer.

It can truly be said that the United States Treasury is the greatest banking institution in the world, and when it is realized that this vast aggregation of wealth has been handled without the loss of a cent to the Government, the spirit of zeal, industry and fidelity on the part of the employees is considered worthy of mention in connection with the performance of their responsible duties.

Are You Mean When You Win?

BY WALTER CAMP

A GENTLEMAN is courteous.

It is not courtesy upon a ball field to cheer an error of the opponents. If it is upon your own grounds, it is the worst kind of boorishness. The same is equally true of any attempt to rattle your opponents by concerted cheering or talking. Moreover, if there are remarkable plays made by your rivals you yourselves should cheer; conceal any chagrin you may feel at the loss it may be to your side, but be courteous to appreciate and applaud an exceptional play by the opponents.

After winning a race or a match, there is no reason why a good, healthy lot of young men should not do plenty of cheering, but there is every reason why they should not make their enjoyment depend upon insulting those who have lost. You cannot take your hilarity off into a corner and choke it to death, and no one wants you to; but gratuitous jibes and jeers at the crestfallen mark you as a man who does not know how to bear a victory, a man whose pate is addled by the excitement or whose bringing up has been at fault.

Postal Savings for Boy Scouts

An Explanation of Uncle Sam's New Bank System

BY HON. ALBERT SIDNEY BURLESON
Postmaster General of the United States

OFFICE OF THE POSTMASTER GENERAL
WASHINGTON, D. C.

MR. JAMES E. WEST,
Chief Scout Executive, Boy Scouts of America, 200 Fifth Avenue, New York City.

MY DEAR MR. WEST:

Your letter inviting me to explain the Postal Savings System to the Boy Scouts of America has been received and I am much pleased at the opportunity it affords of not only doing so, but of commending the excellent service your National Council is performing for our boys and the superb work they in turn are doing for others and for themselves.

I can conceive of no more praiseworthy objects than the Boy Scouts have undertaken. What can be more commendable than an organized effort to develop the health, self-reliance and manliness of our boys, to whom in a few years will be shifted the serious affairs of our national life?

I am specially interested in knowing of the requirements that before a boy may be advanced to the grade of Second-class Scout he must have earned and saved one dollar and that before being promoted to First-class Scout he must have earned and saved two dollars. These requirements are intended to encourage habits of thrift and economy among them. The Postal Savings System was adopted for the purpose of encouraging these same habits among persons of all ranks and stations in life. So the aims of the Postal Savings System and of the Boy Scouts of America are strikingly alike in this important respect.

I note that you have experienced difficulty in enforcing these requirements in instances where there are no savings institutions at the homes of the Scouts. I am pleased that the Postoffice Department is prepared to furnish the facilities you have needed. We now have about 13,000 postoffices at which savings deposits are accepted and others will be added as demand for them arises.

The Postal Savings System in this country has been in existence about two and one-half years and approximately 350,000 depositors now have to their credit $35,000,000.

Any person ten years old or over may open an account. The smallest deposit received is one dollar, but anyone may purchase a postal savings card for 10 cents and, by affixing nine 10-cent postal savings stamps to it from time to time, may use the card for the first deposit.

Other deposits may be made in even dollars, but if the boy finds it inconvenient to deposit $1 at one time, he may continue to purchase savings cards and turn them in to the postoffice when they represent one dollar. If the owner of a savings card, to which nine savings stamps have been affixed, desires his money back, he may cash it at the postoffice instead of opening an account. The most that will be accepted from a depositor in a month is $100, and $500 is the largest account that a person may have in a postal savings depository. All postal savings accounts are interest-bearing and all or any part of one's savings may be withdrawn at any time.

Let me thank you for the effort you are making to get the Postal Savings System before the Boy Scouts, of whom there are now more than 300,000. I hope they will appreciate the advantages it affords and tell the boys and girls with whom they come in daily contact about it. The Scouts are pledged to do good turns to others, and this is one of the ways they can effectually obey this obligation. I feel confident that the usefulness of the Savings System will be greatly enlarged through the efforts of the Boy Scouts. Certainly they are in a position to render the public and the service most effective assistance.

Again thanking you for the opportunity of talking to the boys of your organization, I remain,

Very sincerely,

A. S. Burleson

Where They Grow Reindeers

ONE of the interesting industries carried on by the United States Government is the raising of domesticated reindeer in Alaska.

According to the most recent estimate of the Department of Agriculture, there are not less than 30,000 of these animals in Alaska today. This means that the reindeer industry is by far the largest agricultural proposition in Alaska at this time. There have been instances of cross-breeding of domesticated reindeer and the native wild caribou, which prevents the domesticated deer from degenerating in type.

As that portion of the country which offers fewest other agricultural opportunities is the region best suited to the reindeer industry, it may be developed very profitably.

The white reindeer moss, which is in all Arctic regions, forms the main sustenance of the herds and they require no shelter and little care beyond the restraint of a herder who keeps them from wandering. The meat is of excellent quality and the skins valuable.

At present the individual ownership of reindeer is principally restricted to Eskimos and Indians. Some of the missions still possess herds and there are, of course, the government herds.

According to the investigators there are unsurpassed cattle and sheep raising lands to be found in certain parts of this still unexplored country. However, there are serious obstacles for these industries, obstacles which do not interfere seriously with the reindeer raising.

Bobby's Twilight Dance

BY JOSEPH A. ALTSHELER

AUTHOR OF "FOREST RUNNERS," "YOUNG TRAILERS," "APACHE GOLD," ETC.

BOBBY took the bucket, and, passing through the palisade, walked in all the majesty of his boyhood toward the spring. There was a well within the wooden wall, but it had been dug for use in case of siege, and in the quiet times which had now lasted so long, everybody who wanted water went to the spring, where it could be dipped up, fresh and cool, as it spouted from the side of the hill. Bobby had been upon such errands often, and had a full sense of their dignity and importance, though not reconciled wholly to the amount of labor involved.

The fountain was down the slope, sixty or seventy yards from the palisade, and a little distance beyond it rose the forest, cutting off the view, like a blind wall. It had been cleared away for a certain space by the axes of the settlers until no marksman hidden among the tree trunks could hit the palisade with a rifle ball; but beyond that space it stretched through endless miles.

Bobby had heard many stories of the forest, and he knew that the enemies whom all dreaded most—the savages—of whom the women told by the hearth-fires, came out of its depths. Its long line, black, impenetrable in the twilight, looked to Bobby like another and forbidden world that came up to meet his own, edge to edge.

The sun had gone and the moon had not come, and some of the upper branches which he could dimly see shook themselves at him in a threatening way. There was a moaning sound, but Bobby knew it was the wind driving through the forest, and he was not afraid.

Still, he had never gone for water quite so late and he did not like the gray darkness. He knew the forest was full of wicked things and all the women in the settlement feared it, though he had said stoutly, in the bright sunlight of noonday, that he did not.

He walked on slowly toward the spring and could see the branches of the trees still threatening him and growing more emphatic about it. Bobby resolved that he would not be awed by them, and turned to look at the blockhouse, which he was sure was quite the strongest fortification in the world. In the twilight it swelled to magnificent proportions and the heavy logs, of which it was built, looked like gray stone. The second story projected beyond the lower, and riflemen posted in it could shoot anyone who approached the palisade; or if the palisade should be carried, could fire down at the heads of the enemy. It was a fine, snug place—the strong blockhouse, stored with rifles, powder and ball; he thought also of the cabins around the fort, with their plenty; skins and furs hanging on the walls, buffalo robes on the floors, venison and opossum frying over the red coals, sputtering in their juice and sending out odors most delicious to the nostrils of a boy. How hungry he grew

COSTUMES, WEAPONS, AND UTENSILS OF NORTH AMERICAN INDIANS.

Drawn under the direction of DR. FRANZ BOAZ, Curator of the Department of Anthropology, American Museum of Natural History.

at the thought! And supper would be ready for him, too, when he returned with the water. It was good to be a boy with the hunger of a man, and enough to gratify it.

Bobby turned toward the forest again. It appeared blacker and more threatening than ever. And the wind had the loneliest and dreariest sound.

He approached the spring, and it welcomed him with a gay little laugh as it rippled over the stones and dashed off down the hill side. Its waters were shining silver in the dusk and some merry bubbles sailed along until each, in its turn, broke against a stone or the bank. The comradeship of the brook, which was one of his best friends and beside which he played many a day, cheered Bobby. The waters seemed to smile up at him and there was no mistake about their laugh. He could hear the echo of it, too, half a song, as the water ran over the level after its tumultuous dash down the slope.

Bobby set the bucket down and dipped his hands in the spring. He held them up and the beads of water which fell from them were, sure enough, silver. He threw up a palmful of it and the drops fell in a silver shower around him. He forgot the forest and in his sport capered about.

Some chips lay near and he dropped one in the spring, watching it as the water swept it away, like a ship driven by the waves to its wreck. He liked the sport so well that he tossed in another and then another and he could see the blots they made on the water, until they reached the level, but after that the darkness took them.

He tossed in the biggest chip and ran along by the side of the stream to see its fate. Once it was hurled by the swift whirl of an eddy against the bank, and Bobby thought it would stick there, but it floated away presently and, riding like a boat, swept triumphantly down a straight stretch of tumbling water, until it came to some rocks, through which it had a tortuous and troublesome passage, coming at last into the calm of the level where the water flowed tranquilly and without ripples and bubbles. Bobby had followed the course of the chip with eager eyes and he felt proud of it when it ran the rapids with such dash and entered like a staunch vessel into the smooth waters that lay beyond.

He reached the bottom of the slope and continued his walk by the side of the brook to see what would become of his ship, now going into the forest in which the stream hid itself.

Bobby looked up. The trunks of the trees stood in rows like dim columns. He marked one particular tree, an oak of giant size with wide outspreading boughs and deeply-ridged bark. He looked at the boughs first and then his eyes traveled down the trunk, following the ridges of the bark.

He saw a knot on the tree trunk four or five feet from the ground and he was surprised, for the knot was not there in the daytime. Two little points of light like fungus fire gleamed in the knot! He looked more closely and his blood froze. The knot was the head of an ambushed Indian; even in the gloom he could see the hideous war paint.

And by the next tree was another knot and then another! A whole war party lay hidden in the forest ready to rush upon the settlers made careless by long immunity. The gate of the palisades was wide open.

Bobby knew well the danger. His face grew pale and his knees sank. He shook in the grip of fear.

But that was for only a few moments;

then he regained the command of his muscles, though he seemed very cold.

He remembered now what his father, valiant man and skillful hunter, had told him.

"Never let yourself be surprised, Bobby," he would say, "and if you should be surprised, don't show it."

The boy ran over the sentence two or three times in his head, and looked down at the brook which was trickling along in its merry fashion just as if there were no Indians in the world. He took another furtive look at the forest; he saw what he had seen before.

He would pretend not to know! If he didn't keep on playing the warriors, aware that they had been seen, would rush out, the chance for surprise gone, and capture or shoot him.

Trembling seized him again, and for a little while the blood in his veins was like ice. But he kept recalling and silently repeating his father's advice how to become a border leader, and he felt that the fate of all the people in the settlement depended upon himself—himself alone.

He picked up a little stick and dropping it in the stream watched it float away. Then he dropped another and moved slowly back along the banks toward the place in the hillside from which it flowed.

"A whole war party lay hidden in the forest."

But he would stop now and then and go a step or two in the other direction, thus *pretending*—to fool the red men.

His knees were still weak and his tongue felt bitter in his mouth, but he made a mighty resolve to go through with his part. He danced back and forth with a show of gaiety. The rapid motion, the tension of his muscles, inflamed his brain and he felt his courage rising. Back and forth he danced, his little figure growing shadowy as the twilight waned into night. And all

the time he knew that the warriors behind the trees were thinking that he was just a wild little boy at play, who knew nothing. His heart swelled with a kind of fearful hope and pride.

As he danced he moved slowly toward the palisade. He drew back farther and farther from the trees; now he could not see the gleaming eyes—could scarcely see the heads—and he felt a trifle more secure—but the boughs, moved by the wind, still threatened him—and he *knew* that they whom he had seen were still there in the dark. His knees grew weak and he was afraid that he would fall, but the effort of his will put strength into his legs and he danced again.

His foot struck against something and looking down he saw that it was his bucket. He had come all the way to the source of the brook, and the warriors had not pursued him, though he was still within reach of their rifles. When he stopped dancing and was not buoyed up by the excitement of motion, that awful, weak feeling seized him again, and the will which had overcome it was growing tired. But Bobby felt that he could not come so far just to fail, and kneeling down at the side of the fountain he filled his bucket.

So doing he took another look at the forest. He saw, or thought he saw, shadowy figures moving about; at least there were shifting dark lines against the darker background of the trees. He had to set the bucket of water down—he trembled so, and was so weak. If they should rush upon him now or shoot him from the wood! A minute passed and, neither shot nor rush coming, Bobby felt a return of courage and strength.

He picked up the bucket again and, swinging it, he danced on toward the palisade, his back turned upon the warriors. He did not dare to look back now for fear of arousing their suspicions, and he trembled so much that tiny streams of water splashed out of the bucket, and often he could hear behind him the whoop of the warriors and the crack of their rifles, only to know the next moment that he was merely *thinking* it.

He spent hours walking toward the palisade, or at least it seemed so to him. He did not dare to walk fast. He must still be the boy, lazily doing his appointed task; so he set his bucket down two or three times that he might rest for a few moments, but all the while kept his back toward the warriors.

Now the palisade was nearer. A man appeared at the open gate and, seeing Bobby idling along with the bucket of water, told him to hurry. Bobby replied vaguely that he would be there in time; he still feared to hurry lest the Indians rush and gain the open gate.

There was comfort in the sight of the man and the sound of his voice. But the man disappeared in a moment and then the night seemed fearfully dark, and the wind groaned so. Before him rose the dark mass of the blockhouse and through the open gate of the palisade a cheerful light was shining.

He knew he must preserve his courage and presence of mind to the very end and the tiring will was summoned to its last effort. The gate was only fifteen feet away now, but Bobby jumped at the sound of rushing feet behind him. No, it was only the wind whipping the leaves through the grass, and he calmed himself and moved slowly on. His heart swelled with a sense of triumph, a belief that he had deceived the warriors, and he walked with greater confidence and a steadier step than before.

He had gone half the distance and all was silent behind him save the wind, but

as the gate came nearer he felt a sudden relaxing of will and muscles. He was going to fall, he knew it, unless he made some violent effort, and suddenly casting the bucket of water from him he rushed in at the open gate shouting:

"The Indians! the Indians! they are in the woods! shut the gate!"

Then the boy fell over in a dead faint, while someone shut and barred the gate, and the armed settlers poured forward to the successful defense.

To Make a Safe Camp Fire

BY P. S. RIDSDALE

EXECUTIVE SECRETARY, AMERICAN FORESTRY ASSOCIATION

THERE are almost as many ways to start a camp fire as there are campers.

Many prefer what is known as the "tepee" or "wigwam" style, in which a pyramid is built with fine twigs on which are placed others that are progressively larger until they are full size. Others use on either side of a fireplace two green sticks as supports, and "lay" the fire as with andirons.

But whatever the method of starting, there is only one way that is safe, as far as prevention of forest fires is concerned. Such a safe fire is never built against a fallen log or near a tree. The ground is carefully cleared of inflammable duff and rubbish. Large, flat rocks placed at the sides will support coffee pots or cooking utensils; and if the back is built up with stones it will serve to reflect heat.

This fireplace puts such definite limits on the blaze that when the time comes for quitting the camp a little water and some shovelfuls of soil will effectually extinguish the blaze and prevent the spread of fire to the woods.

A fireplace of this type can be more elaborate and pretentious, of course, but its essential features of safety and convenience can not be much improved.

Such a fireplace is available for use from one camping party to another. Before being used, however, all the accumulated débris should be carefully cleared away.

Stones are in no way essential. In the Florida National Forest, for example, where the soil is a fine sand, one camper asserted that the largest stone he found was in a can of baked beans. In such a place a hole scraped in the sand, with the pine needles and débris raked away, makes an adequate and safe fireplace. Similar conditions elsewhere can be satisfactorily met by making a hollow in the earth; then when the fire is left it can be effectually extinguished by heaping upon it the earth removed from the excavation.

How to be a Forest Ranger—*Now*

BY HENRY S. GRAVES
CHIEF OF THE UNITED STATES FORESTRY SERVICE

IN many parts of this country Boy Scouts, and other fellows as well, are taking an active and important part in the work of conserving the nation's forest resources, which is the duty of rangers and other members of the United States Forest Service. These boys really are forest rangers in the best sense of the term, although they have no title as such, wear no regulation uniform and get no pay for their services. For they do better than anything else the most important and far-reaching thing of all the many, many matters which Uncle Sam's trained rangers are paid to do. That is, they teach other boys —and grown-ups, too—how to use the woods without destroying them. They know what are the benefits and the beauty and the wonder of the woods and why it is wrong to be wasteful and destructive of the trees which Nature plants for man's benefit.

What a Real Ranger Does

A real ranger who rides his horse through the vast, timbered wildernesses of the National Forests, watching for fire, issuing permits to persons who need wood or other things, building roads and trails and keeping selfish folk from abusing the public privileges, spends much of his time teaching people how to keep from destroying the forests.

He never misses a chance to tell a man or a boy, a woman or a girl, why fires must not be started in the brush and leaves, and how, if the young trees are cut or burned, there will be no new growth to replace the old trees when they die or have to be felled for timber. He explains that trees keep the ground from drying up and that, if all the trees are taken away, there will be nothing then to hold back the rain water that it may seep gradually into the lakes and streams, but instead, there will be floods, washouts and landslides when a heavy rain comes, and parching dryness during the season when there is no rain.

What Can You Do?

Suppose, for instance, you are a Boy Scout and that you live near a farm whose owner lets fires start in his woods and

sweep through them and other woods near by. Then, if you want to be a forest ranger, you can show that farmer that fire, even a small blaze which runs through only the fallen leaves and low bushes, kills all the seedlings, the tiny trees which have just poked their fresh green tips above the ground. That means, you will say, that there can be no young trees to grow up and take the place of the big ones which die or have to be cut down.

If you look at woods where the ground is burned over often, you will see almost all the trees are old. You will also see that many of these old trees have fire-scars and holes at the bottom, which let rot into the heart of the tree. Such trees die before their time, and if cut down make less lumber than sound trees would. Fires do not pay, from any standpoint.

What's Unfair and Unmanly

Moreover, you can teach other boys not to drop burning matches in the woods or leave campfires untended; you can explain how selfish and wasteful it is to destroy or permit the destruction of the forests, which have such a necessary and beautiful part in the life and work of the people of any country; you can try to make them see that it is unfair and unmanly to do anything which will deprive others of the beauty and material benefits afforded by the forests. If some man or boy had done something to kill all the trees in your neighborhood, you not only wouldn't have any shade in the summer time, but you couldn't go woods-scouting and there would be no homes for the wild animals and birds.

Help on Signs

In the National Forests the rangers put up signs along the trails and at the lookout stations warning campers, tourists and other persons not to start fires by being careless or thoughtless. Boy Scouts can sometimes get owners to want signs put up on their land, asking people not to make any fires, and can offer to put up signs if the owner will furnish them. Such signs will help to prevent fires, but there is nothing like actually *talking* to people to teach them how cruelly selfish it is and needlessly wasteful to harm or destroy the woods.

Did You Ever Plant a Tree?

Another thing that the ranger does is to plant trees where they are needed. In this example, he is already being followed by a great many Scouts and other boys who plant seeds in small nurseries to grow young trees for transplanting and set out saplings for shade and other useful purposes. Some States will furnish young seedlings for planting, on application to the State forester, and wherever there is a State forester he can be written to for information on how young trees may be grown from seed at home.

So it must be quite plain that it isn't hard to be a forest ranger, even though one does not live near a National Forest or is not old enough to enter the Forest Service of the Government.

How to be a Good Camper

BY DILLON WALLACE

EXPLORER, AND AUTHOR OF "THE LURE OF THE LABRADOR WILD," "SADDLE AND CAMP IN THE ROCKIES," ETC.

DANIEL BOONE, Kit Carson and the other old fellows we admire so much could never have lived a week in the wilderness had they not known all the ins and outs of campcraft—that is, the art of taking care of themselves in the wilderness and of making themselves as comfortable as conditions would permit under canvas or in the open.

A few years ago two young men from the city, who were spending their holiday not far from where I live, wandered into the woods and promptly lost themselves. It was October, the weather was pretty cool, and rain set in. When the young men were found and rescued, after twenty-four hours in the open, they were so chilled and exhausted that they could not walk.

When they were lost they had a good supply of matches in their pockets, each had a jackknife, and plenty of dead wood was scattered about among the trees. But they did not know how to build a fire in the open on a rainy day, and wasted all their matches; and they did not know how to build a shelter, which they might easily have done had they possessed some knowledge of campcraft.

Twenty-four hours in the woods, even though it did rain, would have been a lark for any Scout who had won the Merit Badge for Camping, for he would have known how to build a fire and how to take care of himself.

What the Requirements Are

Anybody can sleep in a tent that somebody else has pitched, or under a shelter someone else has built. One may do this without understanding even the A B C of campcraft. But camping, as we Scouts understand it, means far more than that. It includes the ability to select a good camp site, to erect a tent or other shelter in quick time, to provide against bad weather, and also to guard against sickness by taking proper sanitary precautions.

The ability to do these things can be acquired only by practice and experience. Therefore, in order that we may win a

How to be a Good Camper

Merit Badge declaring us to be expert campers, the National Scout Council requires that we must:

1. Have slept fifty nights in the open or under canvas, at different times.
2. Demonstrate how to put up a tent, and ditch it.
3. Have made a bed of wild material, and a fire with rubbing sticks or flint and steel.
4. State how to choose a camp site and how to prepare for rain; how to build a latrine (toilet) and how to dispose of the camp garbage and refuse.
5. Know how to construct a raft.

Merit Badge for Camping.

Starting Right

We wish to earn this Merit Badge, and we wish to feel when we have earned it that it really stands for something that we really know how to do well. So we shall start right, and not be content with sleeping in a tent in our back yard fifty nights at different times, or in a holiday camp that somebody else has arranged and made comfortable for us. Some Scouts might claim that a back yard camp would conform technically to the requirements. But it does not. The object of this requirement is that we learn as many things as possible about camping by making camp at different times, under different conditions.

It will also be noticed that the specification reads: *"In the open* or *under canvas."* This wording is a little obscure, and as we wish to be thorough, for we wish to feel that we have honestly and conscientiously earned this Merit Badge when it is conferred upon us, we shall interpret the requirement to mean that on *some,* at least, of the fifty nights we are to sleep in the open without the protection of a tent.

In the open does not, however, necessarily mean under the stars. Indeed, it is intended that we learn to build a lean-to or other shelters. A method of building a lean-to is described upon page 146 of the Handbook.

Putting Up a Tent Alone

It is required that the candidate for the Merit Badge must put up a tent alone, and ditch it. Putting up a tent alone is just a matter of practice. The Scout must first, of course, become thoroughly familiar with his tent; then let him practice until he has learned the easiest and quickest method of putting it up.

Let us suppose it is an A or wedge tent —and this is probably the style most Scouts will use. Select two trees a convenient distance apart and stretch the ridge rope between them at the proper height, drawing it as taut as possible before securing it. Now peg down the two rear corners, drawing the bottom of the rear of the tent straight and tightly stretching it between the two pegs. Be careful to keep it aligned at right angles to the ridge rope.

Next peg down the two front corners, using the same precautions as in the rear, and also drawing each side taut and straight at the bottom from the rear peg on that side and at right angles to it. This done, the remaining pegs may be put in place. Any slack that may occur may be taken up by bracing up the ridge pole with two crotched poles, one in front and one in the rear.

Should there be no trees between which to set the tent, cut two stiff poles a little longer than the tent is high at the ridge. Peg down the four corners of the tent in the position in which they are to remain. Go to the rear, and with the ridge rope throw a clove hitch around one of the poles an inch or two from the top of the pole and as close to the tent as possible. It will be well to cut a notch around the pole to prevent the rope from slipping down when stretched.

Now lift the pole to perpendicular position. This will raise the rear of the tent into place. Grasp the rope to keep it taut, to hold the rope and rear of the tent in an upright position, while you go well back, at right angles to the rear of the tent, and secure the rope to a rock, stump or anything that will hold. It may be necessary to drive a stake for this purpose.

Using the other pole, guy the front of the tent in exactly the same manner as the rear. When the tent is finally pegged down it may be found necessary to tighten the guy ropes a little to stiffen the ridge.

It is presumed that before setting the tent the section of ground which the tent is to cover has been leveled and cleared off by cutting out brush, removing stones and knocking away lumps of earth with the back of the axe.

Ditching It

Now the tent must be ditched, in order to carry off surface water in case of a heavy rain. For this purpose a ditch about 4 inches deep should be dug along the four sides of the tent (outside of course), with a drainage ditch leading off on the lowest side, to carry away the water. If the Scout is called upon to ditch a tent at a time when no shovel or tools are at hand he will find that a sharp stick will loosen the earth, and a tin plate will remove it.

Making a Bed of Wild Material

Under the third requirement we must also do two things—make a bed of wild material and make a fire without matches.

On page 147 of the Handbook instructions for making a bed will be found. Spruce boughs, because they have a greater curve and more body and buoyancy, are better than fir balsam. Break, do not cut boughs or limbs with your ax, for this purpose. Boughs that are too big to break with the hand are too big to make a comfortable bed. I do not mean by this that small sprigs are to be used. They are not, for they possess no spring and pack flat and hard. But it will be found that with a little practice pretty large boughs can be broken easily with the hand. Grasp the bough around the stem and bend it upward and backward, and it will snap off at once even though the stem is nearly as thick as your thumb if it is a coniferous tree. If no boughs are obtainable, grass or dried leaves will serve very well for a bed.

Fire Without Matches

A method of making fire without matches—by rubbing sticks—is described in detail on page 70 of the Handbook.

Let me suggest that the Scouts of Buffalo, N. Y., have found that mice nests make excellent tinder. A mouse nest can be

found nearly anywhere in the fields, and here you have your tinder ready-made.

Scouts will find it interesting also to experiment with flint and steel. The back of your knife struck sharply upon flint or quartz will throw a spark. Either dried puff balls or fungus-decayed wood will make good material to catch the spark. This is the trick—to catch the spark—but a little experience will teach you how to do it.

On page 147 of the Handbook will be found suggestions for the selection of a camp site; and on page 154 will be found a quotation from an article by Dr. Charles E. A. Winslow in reference to the water supply. These references should be studied carefully.

Plenty of wood, good water and good drainage are the things to be looked for in selecting a camping place.

Careful About Fires

In this connection it may not be amiss to enter a caution about fires. Choose a naked piece of earth, if possible, upon which to make the fire. Never make a fire upon dry leaves or dry grass. Clear away any surrounding inflammable material to avoid danger of the fire spreading. Put out the very last spark before leaving it, even for a short time.

In case of rain, or in any case in fact, all articles that may be injured by wetting should be stowed in the tent. Usually if placed around the sides they will occupy little room and will not clutter the tent inconveniently. In case there is no tent a lean-to shelter, well thatched, will be found a good protection. In this case the things should be neatly piled upon poles or branches to raise them from the ground. The lean-to should have its ends protected and stand with its back to the storm.

Building the Latrine

For the latrine choose a spot far enough away to preclude odors reaching camp, and in a position where by no possibility drainage from it may contaminate the water supply.

Dig a pit about two and one-half feet deep, two and one-half feet wide and four or five feet long. At each end and slightly forward of the pit firmly set a post extending eighteen inches above the ground. Sixteen inches directly behind each of these posts set another post, which should extend two and one-half feet above the ground. From the front post to the rear post at either end of the pit nail a stiff crosspiece. These are to serve as support for the seat board, which should be about six inches wide and nailed to the crosspieces, flush with the front of the latrine. Another board nailed to the rear posts will serve as a back, and the front may be closed with boards.

If obtainable, a quantity of air-slacked lime should be kept near the latrine, and at least once a day some of it should be sprinkled generously in the pit. In the absence of lime loose earth should be thrown in.

Camp garbage should be burned or buried. If burning is resorted to, a permanent fireplace of stones, built for the purpose, will be found a convenience. No bones or other refuse should be thrown upon the camp ground or in the vicinity of the camp. Refuse draws flies, and flies are dangerous to health.

We have now covered all but one of the tests required for the Merit Badge in camping. Let us be sure that we are perfectly familiar with them.

Aside from the honor and pleasure of winning the badge, all of this is useful knowledge for a Scout to acquire.

Christy Mathewson Says to All Boys—

"Love the Game Beyond the Prize"

Christy Mathewson was born in Factoryville, Pennsylvania, thirty-three years ago. After attending Bucknell University, where he was the star football and baseball player, he joined the Norfolk Club of the Virginia League. At the close of the season he was purchased by the New York Giants. He was only nineteen when he joined the club and was a headliner from the start. His great pitching practically won the World's Championship for the Giants from the Philadelphia Athletics in 1905. In that series he pitched three shut-out games. Six years later he was responsible for one of the two victories turned in by New York pitchers in a World's Series, again with the Athletics. And, in the World's Series with the Red Sox of Boston, in 1913, it is agreed that baseball fans never saw a finer exhibition of pitching than when the "Old Master," as he is affectionately called, single-handed almost won the World's Championship. It is reported that his salary is $12,000 a year.

SO many times when I see boys playing baseball or football or engaging in any other kind of sports, I recall the lines of Henry Newbolt:

> To set the cause above renown,
> To love the game beyond the prize.

These words stuck in my mind way back in my college days, and now, after many years, I believe in them more than ever. I am afraid that too often the average boy—and the average man, too—plays the game just to win. But really, boys,

The big thing isn't to win; the big thing is to do your best.

Doing your best means getting into the game with your whole heart. No matter what the game is, play it for all there is in you and all there is in the game.

This means that you will carefully prepare yourself for every sport you undertake. First, know yourself—know your physical and mental self; know your own weak points and strengthen them; know all your strong points and develop them to the full. That will take practice, practice, then *more* practice, for in athletics, especially, practice makes perfect.

I don't mean practice only with your arms and legs; I mean practice with your brains, too.

Know how to throw, to catch, to bat, to run bases, to punt, to kick goals—anything required by the game—but know also how to "think straight" about the contest. When you play your game with your arms and legs and brains, *too,* you get out of it the most fun and the most benefit.

Every boy knows that a bicycle is a great machine. If you have good legs you can out-pump other boys. But if you don't use your brains when pumping, you're apt to run into something and get the stuffing knocked out of you. Your brains save you many disasters. There are disasters in sport. But boys who use their brains, as well as their arms and legs, usually escape them.

So, boys, in all your sports let your muscles and nerves and mind work together.

You hear about a pitcher's "control." That's about the same thing as guiding a bike right; it means getting where you want to go, or avoiding disasters, by controlling yourself. You can do that only by *thinking,* and—

When you think, THINK STRAIGHT. Some fellows think hard, but CROOKED.

They don't often win—and if they do win they lose your good will and their own self-respect.

No matter whether you win or lose in your games, try always to win everybody's respect. Let them say of you: "He's a fine fellow—*he's square.*"

And don't forget to PLAY THE GAME EVERYWHERE—

in school, on the diamond, on the gridiron, in the gym, on the track. "Playing the game" means playing it *clean,* with all your heart and mind and muscle, and thinking straight. If you do that you will get real joy out of it, and *you will be sure to win* the greatest victory of all, the victory over yourself; and the greatest prize, the respect of everybody.

I wish every boy would pledge himself to "love the game beyond the prize."

Christy Mathewson

What Sports Do for You

BY GUSTAVUS T. KIRBY

CHAIRMAN, ADVISORY COMMITTEE, INTERCOLLEGIATE ASSOCIATION OF AMATEUR ATHLETES OF AMERICA

THE object of going to school is the training of the mind and body, to be taught that which it is to the advantage of one to know, and to learn how to do things.

Boy Scouts, above all others, intend to be prepared both mentally and physically, to be quick of wit and also quick of body. The boy or man who succeeds is the one who not only thinks straight and to the correct conclusion, but who has a body to enable him to carry into action the result of his thought.

Intuition's Value in Sport

Continuous training enables us to do intuitively that which in the beginning we were able to do only through conscious effort.

An intuitive action is better than one in which each step has to be thought out. How slowly and totteringly would we go over the ground in walking if we had to go through the mental process at every step of directing our body to lift one foot, carry it through the air, place it on the ground, find our balance, then lift the other foot, and so on. How few races we would win, if, when we came shoulder to shoulder with our antagonist, our thoughts should be not merely a grim determination to beat him, but to keep our toes from turning out, our arms from waving like windmills, our heads from falling onto the napes of our necks, our stride from short-

ening up, and our legs from wabbling.

All of these things we have been taught, and one by one we have eliminated our faults; we walk without thinking, we run properly without having to give further attention to the elimination of the defects which we had when we first began to train.

This is true, also, of other sports. Often we read of a player's "football sense," and often in a tennis match we see a man start for the place where his adversary is putting the ball before it is apparent to anyone else that the ball is going to that particular spot. True, all of this is intuition, but that intuition comes from a long series of efforts on the part of the athlete and of his trainers as to how best to accomplish the perfection desired.

Self-consciousness Often Causes Defeat

One great cause of defeat in sport is the self-consciousness of the contestant. He brings up before him all the instructions he has received, all the defects he has noted, and begins to wonder whether or not he will be able to follow instructions and often, just by the reason of this foolish mental condition, he is beaten by a far inferior man who has been taught nothing, who has never realized his defects, and who, therefore, goes into a contest with a mind only bent on winning in any old way. Since this is true, one may ask, would it not be better to do things naturally, that is, without being taught? Seldom is this so. Some athletes, like poets, are born, but most of them have to be made, and nothing but careful training and hard work can make them.

To be prepared does not mean just to do things any old way that comes to you, but carefully and painstakingly to learn how to do things the right way and then to do them the right way so often that, no matter how hard you try, you just cannot do them the wrong way.

What "Condition" Counts For

There is nothing which will bring one back to the wrong way of doing things so quickly as being out of condition, for then, when one tries to live up to his record, he has to strive beyond the ordinary, and such efforts always result in losing form. The golf player who presses generally finds himself off the course; the football player, who, when in condition, time and again has been able to make his opening or elude his tacklers, finds himself out of breath and weak instead of strong, and such conditions result not only in poor play but in possible injury.

Lack of condition generally comes from intemperance, usually too many hours of work or play and too little of sleep and rest, sometimes of too much eating, especially of the wrong kind of food; and of course if a boy smokes or drinks he is seldom if ever prepared, for nothing will "take it out of a boy" more than an alcoholic stimulant or smoking.

Other Values of Athletic Contests

To enter into athletic competitions helps a Scout to be prepared. The quality of companionship is one which Scouts should always develop, and nothing aids more in doing so than rubbing elbows with one's friends, acquaintances, and so-called enemies in competition on the field of sport. To represent one's school increases not only the athlete's own enthusiasm for and loyalty to school but also that of the onlookers, and from such feelings arise those of pride and enthusiasm for home and country.

In competition every Scout should remember that then is his opportunity to show how he can play fairly when under stress and temptation and also to learn how to accept defeat gracefully. To be defeated and in that defeat to show appreciation of one's adversary is really a greater victory than to have won vaingloriously.

To be prepared means not only to be able to accomplish results but to do so modestly and with gentlemanly demeanor, for good sportsmanship and good manners go together and with scholastic attainments form the foundation upon which one can build the life of the ideal Scout.

The Man Who Cheered Me

BY WALTER CAMP

A LITTLE incident of my college course meant a great deal to me—and the idea back of it may mean a great deal to you, or to some other fellow, so I am going to tell you about it.

I was a Freshman, and knew almost no one in college except a certain Junior. I had entered in two events in the fall athletic games, one a quarter-mile, the other a hurdle race. I had run the quarter and been beaten, although I finished second. My opponents had all been upper classmen, and received no little encouragement from their friends.

I felt very lonely and disgusted with myself and life in general when I got on the mark for the hurdle. I had but two competitors, and both had been cheered when they came to the scratch. Suddenly as we were getting on our marks I heard a voice halfway down the course call out, "You can do 'em," and I saw my Junior friend waving his hat to me. It was not a classical remark, but it made me feel better. I was clumsy in getting off, and when we came to the sixth hurdle was nearly five yards behind the other two, but from that time on I could hear my friend roaring out, "Go in!" "You've got 'em yet!" "Now you're over," as I went up each flight. I did finish first, and I had hardly touched the tape before he was patting me on the back.

I don't suppose it cost him much to yell for a poor Freshman, but I know that I always thought of him as one of the best fellows I ever knew, and in after years I have remembered enough of the feeling that was in my heart toward him to go out and try to make some others feel that even a Freshman has friends.

The All-Around Athlete

BY GEORGE H. BROOKE
FOOTBALL COACH, UNIVERSITY OF PENNSYLVANIA

THE best citizen a nation possesses is the all-round man, for he is like a country with mountains, hills, dales, rivers, lowlands, streams, seashore, forests and plains.

I have seen huge hammer throwers, men who could whirl a leaden disc into the air and make it sail like a bird. They would think but little of heaving a fifty-six-pound weight as high as a tree. Again, I have seen the lean whippet of a man who could flash along over a quarter-mile in better than forty-nine seconds. The normal man can hold his breath about two minutes. Well, the runner would go better than half a mile in the time the normal man was holding his breath. The point I desire to make is this:

The weight tosser would topple over if he ran 300 yards at the pace the runner goes the mile, and the runner could hardly lift the fifty-six-pound weight that the weight tosser uses as a toy.

If the weight man ran a little he would not only be a better weight tosser, but he would get more delight out of his training; and if the runner played with lighter weights he would enjoy his running the more.

The really great men in intercollegiate affairs are men like Alvin C. Kraenzlein, now the coach of the German Olympic track team; Dr. E. R. Mercer and Mike Dorizas, famous Pennsylvania athletes. When Kraenzlein was at Pennsylvania he could hurdle, broad jump and sprint close to the world's record time. He was a good weight man, an excellent pole vaulter and a corking baseball player. Mercer was chosen as the All-American fullback, he was the intercollegiate champion broad jumper, was the star man on the Pennsylvania one-mile relay team, and always stood one, two, three in his classes in the Medical School. Dorizas is a Greek, who came to Pennsylvania to complete his education. He is one of the strongest men the world has ever known. He has never been thrown on the wrestling mat; he is a discus hurler, a shot putter, and a remarkable swimmer.

The sport that thrives in the winter would hardly do for summer. An athlete cannot allow his frame to remain idle and await the coming of another season. So pitch into something else, master it, and it will assist you in solving things that were difficult to attain in your specialty. I have my football men, some of them 200-pounders, play tennis, wrestle, swim, toss the weights, sprint, and we even have games of tag on the field.

I admire the good student, but if it is a massive brain in a shell of a body that will collapse, I feel that he would have done more as an all-round man. The physical marvel, with little mental cultivation, accomplishes nothing. The men who are hale, rugged and hearty at seventy-five and eighty years of age are the all-round men, who but mellow with the passage of time.

The fellow who is a credit to his school

and class is the man who mentally, morally and physically is as near perfect as it is possible for human to be. It is no disgrace to be a poor athlete, but if a fellow sticks at it any length of time, no matter how much of a weakling he may be, he will not be a poor athlete or a poor student long.

The Olympic champions, the All-American football players, the big league baseball stars and the crack oarsmen of fifteen years from now are all running about in short pants, playing that same game of tag I had my varsity play. I hope they will be good all-round men—good students, good athletes, and, above all, good men; for no matter how brainy or athletic they may be it is all lost if they are not good men. "Do a good turn every day," and if you cannot assist someone else, think a pleasant thought for your brain, breathe good pure air and give your lungs a treat.

How Red-Top Lost the Game

BY DR. WILLIAM BRADY

THE Butt-end Stars had it over the Chapin Street bunch like a tent—but we never discovered until too late the flaw in our tent-pole. That was Red-Top Williams, the port-wing flinger who usually struck out about twenty per cent of the batters who faced him. Red-Top was the tent-pole, I mean, and not the flaw. We considered him the unbeatable box artist of the town. He had speed as well as control, and he was as foxy in action as he was in looks.

No need telling how badly they trimmed us that day. I've forgotten the score long ago—purposely. But what I want to point out is the *why*.

It was Red-Top's blame, and it finished his promising career on the baseball diamond. He has since taken to publishing a paper, telling how other young pitchers succeed.

In the Unlucky Seventh

It is necessary to say that the game went along lovely until the seventh—the fatal seventh—when they landed on poor Red-Top unmercifully and shamed him before all the town. And when we had run down the last howling Chapin Streeter in the last of the awful ninth, we saw why Red-Top had weakened. He had a lump on his face.

All night long he had been tossing and thrashing about his bed with a poultice and hot-drops and I don't know what all, trying in vain to put that growling molar to sleep. The lack of rest, the poisoning of his system by the pus in that "ulcerated tooth," the strain of the toothache—these had conspired to drag our honored name in the dust. And never again were we able to wrest back the championship of the

town. All on account of a pesky lame tooth!

Other Games Lost the Same Way

Bad teeth have lost more than one great game. They have beaten many a contender for the honors of life. They have sent thrones tottering to an untimely fall. A boy who starts the race with bad teeth hasn't a ghost of a chance to win. His handicap is too big, his tenacity impaired, and his efficiency weakened. He is not a loyal Scout, for he has failed to meet the first demand: BE PREPARED.

If I were Chief Scout I should permit no one to wear the badge of honor whose teeth were not sound. Although a Scout might be fairly healthy for a time with a mouthful of bad teeth, he will inevitably fail physically later on unless those teeth are put in good condition immediately. Every inspection should include a thorough examination of the teeth.

Be Brave—at the Dentist's

A decayed tooth paves the way for dyspepsia, weak blood, chronic rheumatism, scrofula, tonsilitis, and general ill health. There isn't a more precious possession in the world than a full complement of hard-working dental machinery.

Be Prepared. KEEP your teeth sound. Surely a Scout cannot be brave if he is afraid of the dentist! And if he gets the good habit of visiting the dentist *at least once a year* he will keep his teeth. Keeping them means that he will remain clean, cheerful, loyal and helpful. That means he will be brave.

How Long Can You Hold Your Breath?

BY DR. WILLIAM BRADY

A FAVORITE pastime of the boys who used to patronize the "ol' swimmin' hole" was a breath-holding contest. The one who rejoiced in the possession of a real watch with a second hand on it acted as umpire and everybody else entered the contest with a vim. We had no science to help us, of course. Had we known the secret of how to hold the breath the contest would have been more spectacular.

The average healthy boy can keep his face under water for forty seconds. Then he has to come up and grab another breath of air. Once in a while a boy may go to the forty-five or fifty seconds point at a pinch, but it is hard. Now, with the aid of a simple scientific application, this average boy can easily *double* his record; he may even be able to stay under for *two* or *two and one-half minutes* if he doesn't thrash around and use up too much oxygen while trying the experiment.

The thing may be tried out in private, at

first, to make sure of yourself. Then, having learned the secret, you can propose a contest the first time you get the chance, and when the boys have satisfied themselves about the forty seconds limit coolly announce that you can stay under eighty seconds or longer, according to your private record. This will bring challenges and it is great fun to "show them."

The Why and How of It

Here's the way to do it:

At rest you breathe about eighteen or twenty times per minute. But you breathe in a shallow manner. Now, the reason you take eighteen shallow breaths per minute while at rest is that the blood requires that much oxygen and has a certain quantity of carbon dioxide gas to get rid of.

Supposing you sit down with your watch in hand and time yourself while you hold your breath. We'll say you stick it out for forty seconds. That is your "breaking point." You simply can't go beyond it, try as you may.

But if you had some way of filling the blood with a superabundance of oxygen and clearing out some of the overabundance of carbon dioxide gas, then it stands to reason that you could get along comfortably for several more seconds without breathing, doesn't it? Any Scout who doubts the thing will have to try it for himself. That's the way to settle these little problems.

Mastering the Trick

With your watch in hand, start in breathing twenty times a minute through your open mouth, but rather more deeply than ordinarily. Don't overdo the breathing; don't force out the air, but let it rush out of itself. The idea is to overfill the lungs and blood with oxygen and reduce the proportion of carbon dioxide. Keep up this steady, deep breathing for two or two and one-half minutes. Then take a final, moderately deep inspiration and hold your breath as long as you can.

Don't keep your eyes too closely fixed on the watch. It will make you nervous to see the second hand galloping around the circuit and coming down the half-minute stretch the second lap, and you still holding your breath! You are apt to become anxious about it—afraid you'll forget how to breathe before you feel the need for another breath! You can easily make a record of eighty seconds. Some boys can go as long as two and one-half minutes without a breath.

And the experiment is perfectly harmless at all events. It tends to strengthen the lungs and heart, in fact.

Record Is 8 Minutes, 13 Seconds

Now you see how you can stay under water twice or four times as long as the untutored swimmer. Only remember you must not be out of breath when you begin, for the experiment would prove a dismal failure, the blood being so saturated with carbon dioxide at the beginning. You must do the stunt while you are at rest and you must merely stay under water and not exert yourself swimming while performing the test.

Professor Yandell Henderson, of Yale, has tried these experiments on Yale students. In one case the student breathed deeply for three minutes, then took two or three inhalations of oxygen from a bag and then held his breath for eight minutes and thirteen seconds! Some breathing!

Fun with a Pocket Compass

An Electrical Stunt that is Interesting and Helpful

BY ROBERT C. MATHES

NEARLY every Scout has a pocket compass as a part of his outfit for camping trips or long hikes. Have you ever wondered why the little needle always points so truly in the direction of the pole star? This question has puzzled many since the discovery of this property in the lodestone or natural magnetic iron ore by the Chinese about 3,000 years ago, and no satisfactory answer has yet been found.

With the help of a few simple things any boy can find out much about how it behaves. All you need are a bar, or horseshoe magnet, a few sewing and knitting needles, and some pieces of soft iron, such as nails. The magnet will be the hardest to get; but you may be able to get one from the ringer of an old telephone set.

First, of course, you will notice that the ends of the magnet attract the ends of the compass and that a particular end of the needle always pulls to it the same end of the magnet. Now stroke a knitting needle with one end of the magnet, taking care to stroke always in the same direction, and bring it up to the compass. It acts the same way as the magnet did and is itself now a magnet, and will now pick up small pieces of iron. If you do the same with a piece of soft iron, as a nail, you will find that it will not become a strong magnet.

Two Kinds of Magnetism

If you hang the nail or piece of soft iron from the magnet, it in turn will pick up another small piece of iron. This is called *induced* magnetism, because it is caused by another magnet. If you take the magnet away the nail will drop what it holds. A piece of hard steel, like a knitting needle, will continue to pick up other needles and tacks. This is called *permanent* magnetism. The harder the steel is, the harder it is to magnetize it, but then it holds its magnetism much longer.

Now magnetize a couple of sewing needles by rubbing; put each on a piece of cork and put in a dish of water. They will point north and south just as the compass does. Let us call the end that points north, the North pole, and the other the South pole. If you bring the North pole of one needle to the South pole of the other they draw together, but if you bring it to the North pole, it will force it away. From this we can say that *like* poles *repel* and *unlike* poles *attract*. You will further find that of every magnet you will bring up to such a needle, one end will attract it and the other repel it; so that you see every magnet has two poles and we can never have one without the other. If you

break a magnet in two, it will get two new poles where broken, and you will have two complete magnets, each with a North and a South pole. (Fig. 1.)

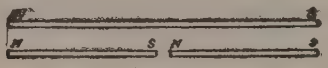


Fig. 1

The explanation we can now give of the action of the compass in always pointing north is that the earth itself is a great magnet. It has one magnetic pole near, but not at the North pole, and the other near the South pole. If a needle, suspended so that it can move freely in all directions, be placed at one of these magnetic poles, it will point directly downward. At other points such a needle will take various positions, depending on its distance from the poles. At a point midway between them it will be horizontal.

Using the Compass

We can use the pocket compass to tell when we have a current of electricity. Take a piece of copper wire and lay it over the compass so that the wire is in the same direction as the needle. Now connect the ends of the wire to a battery. If you have a good battery the needle will jerk around and try to place itself crossways with the wire, heading east or west, according to the direction of the current. The stronger the battery, the quicker it will turn.

We can very easily make an instrument to tell us when we have quite small currents. Such an instrument is called a galvanometer.

This consists of a number of turns of wire arranged so that the compass may be conveniently placed inside them. The frame on which to wind the wire may be made of cardboard. Cut out two rings of cardboard of, say, 5 inches inside diameter and 5¾ inches outside diameter (Fig. 2). Take a strip of cardboard and

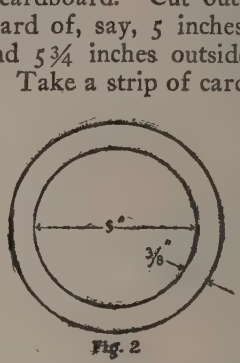


Fig. 2

make it into a hoop which will just fit inside these rings. Fasten one ring on each edge of this hoop by gluing on small strips of strong paper.

Next we must have a support to hold the compass. Take a piece of soft pine 5 x ¾ x 12 inches. In this, cut a notch as shown (Fig. 3), just large enough for your

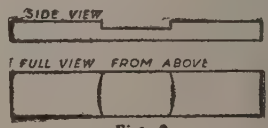


Fig. 3

compass to fit in. Fasten this in its place (Fig. 4) with brass tacks. Do not use iron in fastening things together, as iron will affect the needle, though for an experimental instrument like this it would not make much difference.

Now wind wire in your circular frame. Any insulated wire, such as bell wire, will do. The more turns you put on, the less current it will take to throw the needle. You can use different numbers of turns at different times by bringing out several taps from the winding.

Finally, you want to mount the frame on a base so that it will stand up. You can do this by gluing it between two strips of wood, which are nailed down to the

baseboard with fine brads, as you can see from the sketch of the completed instrument (Fig. 4).

It will be very handy to bring the two ends of the wire out to binding posts.

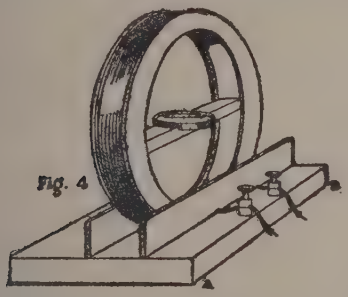


Fig. 4

Those taken from the carbons of an old dry cell will serve.

When you send a current through the coil of wire the needle will turn to one side or the other. A strong current will turn it further and quicker than a small one.

If you do any experimenting it will be worth while to make one of these, as it costs nothing but a little work. All the material you will probably find about the house.

In using the instrument it must be placed so that the edge A B points north and south. If you wish to use it in any other position, you can fasten a small bar magnet on the under side of the wooden piece holding the compass. The instrument will then be much less sensitive.

A Battle Royal Between Snakes

THE writer was privileged to witness last summer in California a battle between a king snake and a huge rattlesnake. The king snake is the only thing a "rattler" fears.

On a bear hunt in the heart of the Sierras, we entered a rocky gorge known to always abound with rattlesnakes. The guide on a previous trip had killed sixteen. To our surprise, as we worked through the tangled rocky canyon, always on the lookout for snakes, no rattler was heard or seen. Near the outlet of the gorge the mystery was solved. We began here and there to see the slender striped king snake, and knew then a colony of these harmless "rattler fighters" had passed through ahead of us, driving every other snake to cover. Soon we saw a large rattler five feet long and as thick as a man's wrist being attacked by a king snake about three feet in length and no larger than a broomstick. Around and around the coiled rattler the king would circle, with movements swift as lightning. As the rattler would strike, with rattles buzzing, the silent king would like a flash avoid the terrible fangs, and then dart in to wind its whip like coils about the throat of its victim. But the rattler was quick also, and time and time again would recoil too quickly for the king. Finally, after twenty minutes of this terrific struggle, the doomed rattler began to grow tired. After one of its lunges at its tormentor, the king snake, with motion too quick for the eye, succeeded in winding its lithe body about the rattler's throat. Over and over they thrashed about until the rattler gradually was choked to death. Then the king snake silently glided away.

TAD, MAN-MAKER

by JOSEPH AMES

I

A SERIOUS PROBLEM

GRAY blanket trailing unheeded from his shoulders, Tad Costa crouched tensely motionless on the sidelines. One hand was flattened on the damp turf before him; the other lay clenched across his bent knee. A spot of vivid color glowed high on each lean cheek. His eyes, under their straight, black brows, stared strainingly and with a sort of helpless fury at the twin lines of battered, panting men grappling on the chalk-lined arena.

Eloquent as it was, his face did not express a tithe of the rage and shame and bitter disappointment that filled his soul. The varsity—*his* varsity—had gone utterly to pieces. The great machine which had been oiled and tended and tested with such zealous care through all these strenuous autumn weeks, until it ran without a seeming flaw, had suddenly, a scant week before the big game, commenced to pound and creak and rattle painfully, as if some vital part was missing. It was like a high-power motor car which slides smoothly and easily up a hard grade only to gasp and sputter and stall on a wretched little insignificant slope.

There lay the rub. The match had been carelessly arranged for the Saturday before the big game as a means of giving the varsity a little added practice. Not one of the players doubted the result for an instant, any more than he doubted the result of that daily scrimmage with his own scrub. In fact it seemed almost a pity, some of them thought tolerantly, that this bunch of lightweights should be battered and beaten and overwhelmed, as of course they must, by the infinitely superior weight and skill of the university eleven. It was too bad the teams couldn't have been a trifle more evenly balanced.

Lightweights the visitors may have been, but they swiftly proved that failing to be the least of handicaps. Lean, lithe, hard as nails, swift as deer hounds and as unafraid, they sailed into the big machine like a lot of wild cats, setting a pace from the very start which the home team had never supposed even remotely possible.

Jolted out of their complacent assurance, the big men gasped, grunted and then prepared to annihilate this cocky aggregation of New Hampshire bantams. Oddly

enough the youngsters refused to be crushed. Instead of submitting tamely to the process, as they ought by every precedent, they fought back with a fierce, stinging fury that swiftly got the nerve of their opponents and resulted in a shameful, inexplicable slump.

In vain, perspiring coaches raved up and

"'Rotten!' muttered Costa."

down the sidelines, aghast at the sight of plays muddled, dependable men losing their grip, and everything going to the dogs. In vain players were yanked out and others hustled into their places. It seemed as if the last state was worse than the first. It was the spirit that was lacking —that galvanizing spirit which dominated the weaker team and which was leading them, if not to victory, at least to something almost as humiliating to the great university.

Costa realized this unerringly when the head coach began feverishly picking substitutes from the dazed, startled bunch around him.

"That won't do any good," he muttered. "It's grit and confidence they want —not beef."

But still he hoped; and when another of the scrubs started nervously at the sound of Flood's roaring summons, paled a little and stumbled to his feet, the kneeling featherweight reached out impulsively and held him for a second.

"Fight 'em, Mac!" he grated savagely. "Get out there and *do* something, old man —and keep on doing. Put some ginger into the crowd!"

It seemed incredible that those men out there should let themselves be balked and outplayed at every turn by such a team. They were not cowards. Usually they had nerve and grit to spare. What had they done with it? Why had they lost confidence so completely?

Costa's lips presently took on a bitter curve. Perhaps it was because things had always come their way too easily. Perhaps if they had been obliged to struggle as he had struggled all his life against the dragging handicap of his diminutive build they wouldn't give in so readily.

Fight? He smiled grimly. They didn't know the meaning of the word. Their greatest difficulties had been to perfect themselves in the finer points of the game, to train down their bodies or build them up, to learn to use their heads. They had no conception of what it meant to have a body which could not be built up; to be so wretchedly small and light that the mere appearance of "Tiny Tad" among the motley array of aspirants for the fresh-

man eleven was enough to send up a roar of inextinguishable mirth.

That was four years ago. Since then his usefulness on the scrub had been amply proven and he had never ceased to struggle for the varsity. He had never made it. Always there was someone else—someone he had coached, perhaps—to take the place he coveted. Twice, because of his uncanny skill at kicking, he had been hustled in for the last few minutes of a desperate game, a sort of forlorn hope. But that was all; and of this last season only a week remained.

But Costa was not fretting over this now. Long ago he had ceased to feel that bitter, unavailing protest which had tormented him at first. He had become resigned to the part fate had given him to play, and even extracted a certain satisfaction in the thought that perhaps after all he was doing more for the college and the team than if the darling wish of his heart had been granted him. Besides, at the present moment, there was something a thousand times more real and vital to worry over.

As the little team whirled and scurried about the heavier one, blocking, thwarting, turning trick after trick with diabolical cleverness, Costa's nervousness grew more and more apparent. They couldn't actually score, of course; it was impossible. And yet——

The blanket slipped from his shoulders and lay unheeded on the sodden turf. Out of the dun, low-hanging clouds came a damp mist that was almost a drizzle, but he did not feel it. He was watching Gifford, the steady, dependable Gifford, being drawn in by a fake attack of the most transparent sort. It was unheard of—inexcusable! What had gotten into the fellow?

"Rotten!" muttered Costa, the angry color deepening in his cheeks. "Oh, rotten—*rotten!*"

The blanket was flung awkwardly about his shoulders and a deep voice drawled slowly: "Don't want to catch cold, Tad. The air's mighty raw."

Costa growled impatiently; then turned abruptly and stared at the man beside him—almost the only substitute save himself who had played no part in that futile, feverish shifting of the line-up. It was an odd glance, long, searching, appraising, and took in every inch of the big fellow from his square, good-natured, rather heavy face to the powerful legs encased in their woolen stockings. It was the sort of keen, yet impersonal scrutiny with which one sizes up a total stranger, mingled with a faint touch of wonder, and some contempt. But not a word passed the little fellow's lips, and swiftly he resumed his anxious study of the game.

In the last five minutes of play the lighter team fairly rushed the demoralized varsity down the field in a series of brilliant plays that turned Costa cold and clamped his jaws in horrified suspense. When at length the welcome whistle sounded, with the backs of the sweating, cringing men almost touching their own goal posts, the kneeling fellow gave a long sigh of relief and laxed his muscles. For an instant he crouched there scowling; then he sprang up.

"Come on, Butch," he said curtly. "Let's get out of this."

He was sore and sick at heart. To see any of the squad now would be intolerable. The big chap scrambled to his feet and followed without question. The gray dusk was closing in rapidly. Presently a cold drizzle began to filter down from the leaden skies. They reached the gates and passed through without looking back. Behind them half-hearted cheers from the

discouraged rooters were more eloquent than utter silence.

II

PLANTING THE SEED

Without a word the two men tramped up the stairs and into their quarters. Costa snapped on the light and with nervous haste began to strip off the useless armor in which so many times he had stood chafing and inactive on the sidelines. With a sigh, "Butch" Hartigan dropped into a padded chair and for a moment or two sat staring soberly at the opposite wall. Presently he sighed again and stretched his bulky legs.

"That was certainly some rotten!" he commented. "I reckon there'll be a big shake-up Monday."

Costa's only reply was an inarticulate snort. His face was still dark and angry; his eyes glowed. One after another his garments went flying to various corners as if, in this almost childish action, he found some slight relief to his pent-up feelings.

"I don't suppose I'll have a show no matter how many shifts are made," mourned the lolling giant lugubriously.

A heavy cleated shoe thudded to the floor, and Costa's slim, white, flat-muscled body straightened with a jerk.

"Why should you?"

The words, snapping from his lips with sharp, bitter emphasis, brought the big fellow upright, his square, heavy face amazed and puzzled.

"What in thunder——"

"I said why should you have a chance?" Costa faced his room-mate squarely now. His eyes had narrowed to mere slits. "What have you ever done to make Flood think you're the right stuff for the varsity?"

Hartigan frowned a little; then, face clearing, he dropped back against the cushions with a smile. "Don't take it out on me just because I'm handy," he protested, good-naturedly. "Haven't I slaved like a dog for two solid years on the scrub without getting a sniff at the varsity?"

"Slaved?" Costa laughed, but there was little mirth in the sound. "A lot you have! Why, Butch, you don't know the meaning of the word. There's never been a time when you've done more than half you might have done with that big carcass of yours. You're lazy—loggy. Day after day you come out to practice and do just so much and no more. You've got so you take your football the way fellows take a course in the gym—for *exercise!* If it wasn't for your bull strength you wouldn't even be on the scrub, and yet you sit there and wonder why Flood doesn't give you a show."

The smile had faded from the big chap's face; a dull red darkened his tan. "That's going pretty strong, Tad," he protested. "You're sore about the way things went this afternoon, and——"

"Sore!" cut in Costa, jerkily. "Of course I am; anybody would be. But I'm not half as sore over the rotten mess they made as to see the way you take it. You act as if it wasn't up to you at all, just because you didn't happen to be in it. That one thing alone proves what I'm saying. You've never woke up. You've never caught the real spirit of it. Because you weren't snapped up by the coaches the first crack out of the box, you've laid down and stopped trying. Jove! If I had a few of your inches and thirty pounds of your beef, nothing under heaven would stop me. I'd fight tooth and nail every

minute of the time until I *made* 'em take me because they couldn't afford to let me go—and then I'd keep on fighting to show them they hadn't made a mistake in putting me on the team."

Abruptly he turned away and vanished into the bathroom, leaving Butch Hartigan to stare after him, dull anger darkening in his face and glinting in his eyes. The big hands gripped the padded chair arms as he bent forward, lips parted before an indignant protest against those stinging, humiliating charges. No one had ever talked to him quite like that before. He wouldn't take it even from Tad Costa. It wasn't at all the sort of treatment he had every right to expect from his friend.

With unwonted agility Butch leaped up and took a swift stride or two toward the open door from which sounded the splashing of a shower. Then, exactly as if he had run headlong into an invisible barrier, he stopped and his teeth came together with a click. The seconds ticked away as he stood there motionless. His eyes were wide, unseeing, and across his heavy, almost stolid face, there swept in swift succession, doubt, questioning, a dawning certainty, a keen chagrin, and last of all, dull, crimson shame.

Butch was not very quick witted nor in the least introspective. He scarcely ever thought of himself at all, and to analyze his own emotions and mental processes was as rare as a snow storm in June. But somehow there seemed no need of mental analysis now. On the heels of that first involuntary rush of anger caused by the blow to his self-esteem, came the unpleasant realization that Costa hadn't made a single charge that wasn't true. He *had* given up too easily. When recognition failed to come his way at first he had been entirely too ready to degenerate into a fixture on the scrubs. It had never occurred to him to fight for that recognition with all the power and passion in his being, to force Flood by hammering persistence into a tacit acknowledgment of his worth.

He walked over to the window and stared down on the glistening blackness of the rain-swept pavements. That was the thing Costa had been doing all these years, with one chance in a thousand of success; yet he had never given up. The flush deepened in Hartigan's face and his fingers locked themselves spasmodically behind his back. He was very fond of Tad, but always his liking had been tinged by a touch of that half-amused, protective tolerance a big man feels for a little one. It was not exactly comfortable to realize that all along Tad had been the bigger man.

Butch moved his shoulders uneasily; then, as he heard the soft pad-pad of Costa's bare feet, his big frame stiffened, in unrelenting displeasure, until the little fellow had passed on into the bedroom. Then, with nervous, fumbling fingers, he tore off his clothes and hustled under the shower.

He dressed as hurriedly, still flushed and uncomfortable. Costa seemed to have cooled down a lot, but he made no effort at conversation. Together they took their silent way to the training table, and after a gloomy half hour, in which few of the shame-faced football squad had a word to say, they tramped as silently back to the room again.

All evening Butch sat dumb, an open book before him and his lips sealed by the acute embarrassment that gripped him so annoyingly. Never easy for him to voice his thoughts, tonight it seemed impossible. He wanted desperately to talk but he couldn't. And Costa, supposing

him to be still sulking, made no attempt to help him out.

In bed, the sheltering darkness pressing down upon him, the big fellow found no respite from the intense longing to voice the question that had been trembling on his lips for hours. He tossed and turned and lay glowering at the invisible ceiling, until it seemed as if midnight at least must have come and gone. Then all at once he yielded to the pressing impulse.

"Say—Tad," he whispered, hoping and fearing at one and the same time that Costa was awake.

"Yep," came back instant response.

Hartigan gulped and took the plunge manfully.

"I—I've been—— Look here, Tad. You—er—waked me up all right this afternoon, but I—I'm afraid it's—too late."

From across the room came the sudden jouncing creak of Costa sitting up in bed.

"Too late!" The eager, vibrant voice cutting through the darkness, stirred the big chap inexplicably. "Get rid of that idea right away, Butch. Why, you've got a week left—a whole week!"

"All evening Butch sat dumb, an open book before him."

"I know," sighed Butch despondently; "but what good will that do if I don't get a chance? They won't put me in Monday; they won't even look at me."

"Monday? Of course not; nor the next day, either. You've got to show 'em first that they need you."

"But how——"

"The way I told you before supper. You'll be on the scrub as usual. Well, it's

up to you to go after the varsity as if every fellow on it was your worst enemy. Jump into every play with all the grit you've got. Use your head. Keep pounding the line every minute of the time until Flood sees he's got to use you. It'll be no cinch, but you can do it if you try. You've got to do it, Butch!"

A tingling thrill shot through the big man, clenching his fists and tensing every muscle of the great body. The blood ran faster in his veins. A fierce determination overwhelmed him to win against any odds.

"Jove, Tad!" he breathed fervently. "I will!"

III

THE AWAKENING

Three o'clock found Butch Hartigan girded for the fray, alert, eager, chafing and fretting over every minute of delay. His manner was in such marked contrast to his usual stolid placidity that more than one man turned an envious eye in his direction, supposing him to be one of the fortunates happily affected by the big shake-up.

These were speedily undeceived. In spite of the reckless manner in which Flood and his assistants cut and slashed the demoralized eleven, the scrub fullback was not one of those advanced. The head coach did not even waste a glance on him as he selected the men to be tried out that first day.

However, though Butch secretly hoped for a miracle, he was not really expecting one. He had yet to make good. Tomorrow might tell a different story.

The scrub was given the ball, the anxious, hovering coaches urged on the varsity in staccato voices, and the struggle commenced.

Butch was the pivot of that first rush; quarterback Costa saw to that. He was in the second, too, and the third, and each time it seemed as if the living wall against which he flung himself grew firmer and more resistless. He did not realize that every player in that other line, shamed by the humiliating exhibition of Saturday, stung by the taunts and urgings of the coaches, thrilled—some of them—by the desperate hope of making good and permanently supplanting those whose places they only held on sufferance, was striving to hold the scrub with precisely the degree of stubborn determination that dominated Hartigan. Butch was oblivious of all that. He was conscious only of a discouraging sense of immovable solidity in the line he tried to buck; and presently a conviction began stealing over him that his efforts were quite useless, that they would continue to be useless if he kept up the grilling struggle to the end of time.

Insensibly he relaxed just as he had been wont to relax in the old days. Something was lacking in the next rush, an almost imperceptible weakening. The scrub was flung back for a loss. As Butch scrambled to his feet he found Costa beside him and felt the quarter's nervous fingers close about his wrist with almost painful force.

"You ducked!" accused the slim fellow in a fierce whisper. "No more of that, Butch. Fight 'em! Rip 'em up! Keep at 'em every second. We'll get 'em in the end."

The fullback's flushed, perspiring face took on a deeper color, and with a growl he sprang to his place in the line-up. Five minutes passed—ten. Repeatedly the scrub lost the ball, but Flood ordered them to keep it. Butch no longer thought of relaxing his efforts, for in the solid line before him he felt a faint give, a tremor. Again and again he bucked with all his

strength and skill, and each time it seemed as if he shook the line a little more. Costa's shrill voice, commanding, beseeching, reviling by turns, rose constantly above the din and heartened him as it did so many others. When the varsity stiffened again it kept Butch stirred up to continued assault. When the ball was taken from them just as he felt that another running charge would bring the longed-for gain, it was Tad who roused in the disappointed fullback a determination to get even by blocking the varsity's advance.

In this wise the grinding hour of practice passed. Keyed up by Costa's urging, Butch flung himself into the struggle with dogged, tireless persistence. Always it was an uphill fight. They never seemed to accomplish anything spectacular, either in attack or defense, yet when the darkness surprised Butch by the suddenness of its coming, he had the comfortable conviction of having made a better showing than he had ever made before.

He expected at least a word or two of praise from Flood, but that worthy passed him close without even a glance. His heart sank with a thud, and on the way home he blurted out his disappointment to Costa. Tad only laughed.

"You old idiot!" he chuckled. "Did you expect him to fall on your neck? Get rid of that idea mighty sudden. If you're expecting to be put back on the varsity tomorrow, you want to forget that, too."

Privately that was exactly what Butch had been hoping for, but he refrained from expressing himself to Tad. He did not lose hope, either. After outplaying at least two members of the first eleven today it seemed impossible that Flood could ignore him any longer.

It was just that thing which happened. Not only was Hartigan left unheeded on the scrub next day, but—crowning insult of all—one of the tackles, a fellow whose work had seemed almost mediocre, was picked by the head coach to take the place of a man he had dropped.

Furious, but with an elaborate affectation of indifference, Butch turned away. For a second time he was tempted to walk off the field, but in time he happened to catch Costa's eye, and something in the little fellow's glance swept away the impulse. A moment later Tad was at his side.

"Show him!" he whispered harshly. "Rip up that line and show Flood he's wrong!"

Hartigan's big fists clenched and with a fierce eagerness he set himself to the task. Over and over again he bucked the varsity, each time a little harder than before. There was no possibility of let-up, no chance for his anger to cool, for Costa was constantly at him, urging, imploring, stinging him to fresh remembrance and fresh effort.

At last the formidable line gave way, stiffened, sagged again and broke to let Butch through for several yards before he was brought to earth. Fiercely exultant, he was up and at them again. He would show Flood a thing or two. Once more he crashed through the opposition for a gain. His blood was up. The line was not invulnerable after all. He could shatter it almost at will. Slowly, erratically, but quite surely in spite of Flood's vitriolic adjurations to the varsity to "Hold 'em!" the battle surged down the field to a first glorious touchdown.

On Wednesday, swelling inwardly with pride and satisfaction, but outwardly quite bored and stolid, Butch obeyed the coach's curt command and stalked over to the varsity line. He missed Tad's stimulating influence and inspiring personality, but in spite of that he played what he supposed

to be a very good game. On Thursday, without explanation and without excuse, he was dropped back to the scrub.

For a moment he could not believe his ears, but stared at Flood amazed, aghast, jaw sagging foolishly. Then dull, crimson pride came to his relief and sent him, head high and shoulders squared, but face flaming with a tell-tale flush, back to the position he thought he had left for good and all.

That afternoon it was really Costa who played at full. Without him Hartigan would have been a mere hulk of bone and placid muscle, lacking the dominating spark of ambition or even rage. He did his best because Tad forced him to, but always, in the rare moments when he had time to think at all, a single, dull, bitter protest reiterated through his brain.

What was the use of it all when he had been tested, found wanting and tossed aside? What was the use of trying any further?

It was Tad, too, who fell upon him that evening tooth and nail, and with scolding sarcasm and laughter, and a few brief words of quiet encouragement, planted new hope in his breast.

"That don't mean a darn thing," he informed Butch lightly. "He's trying you out, you goat! If you give up now I'll beat you to a pulp, big as you are."

It was Tad again who kept his chum vigorously to the scratch on that shaky, nerve-racking last day of practice, and stood beside the worried fellow the morning of the game, trying to pretend he didn't care a hang about anything as he listened breathlessly to the maddeningly deliberate voice of the head coach.

"—— and Hartigan at full."

Tad felt the big body beside him quiver and then stiffen. His own face turned white and there was a sickening shrinking somewhere inside him.

He had wanted this thing desperately. He had strained every nerve to bring it about. But now, in the moment of triumph, a sudden, bewildering fear overwhelmed him.

Would Butch make good without the constant, driving stimulation which had kept him keyed up and taken the place of the dominating spirit that makes a man lose sight of everything save the utter need of fighting and winning for his college and his team? The big chap lacked that spirit, Costa knew, but until this moment he had never stopped to think what the lack might mean when his own moral support had been withdrawn.

Tad shivered a little and moistened his lips. The possibility that friendship had blinded his judgment and made him a traitor to the varsity turned him cold. And yet the thing was done; it was too late to remedy.

IV

THE GOAD OF INSULT

With the thunder of voices acclaiming the varsity still roaring in his ears, Tad Costa moved slowly to his accustomed place on the sidelines. That it was the last of these many weary vigils did not now occur to him. His face was sober and faintly troubled. His eyes, blind to the high, massed stands dripping blue or flaming crimson, swept unheeding over the stalwart brawn of the enemy's line to rest with odd, wistful questioning on a bulking, blue-jerseyed figure standing out among his fellows with curious distinctness.

Would Butch make good? The question was still throbbing through his mind with wearing persistency. He had done

his best to goad his friend—to pound into the rather slow-acting brain the vital need of fighting a thousand times more desperately than he had ever fought before; and Hartigan had squared his jaws and nodded agreement to each stinging phrase and imploring adjuration.

But still Tad doubted. Now that it was too late, the big chap's faults loomed up with vivid clearness. Dominated by pique, or anger, sometimes by Costa's tireless urging alone, Hartigan had indeed made a surprising showing and one which amply warranted Flood's using him at this crucial moment. But always the personal element had been present; always there had been some sort of stimulation behind his work above and beyond the stimulation of the game alone. He had never known what it was to fight against a real enemy, oblivious to pain and weariness, careless of mere ambition, with only that single, flaming goal of victory for the team constantly before his eyes.

Would he do that? Could he? Tad wondered, doubtful and uneasy, and as the whistle shrilled suddenly, unleashing the lines of straining men to pound over the turf and crash together in that first scrimmage, he drew a quick breath and waited tensely the confirmation of his fears.

The first quarter passed leaving him still on the ragged edge of uncertainty. The teams had swiftly proved themselves uncommonly well balanced. Up and down the field they surged, slowly, grindingly, with small gains and frequent kicking. The men were fit. There was no hint of the weakening which had brought about that shameful demoralization of a week ago. Hartigan himself seemed to respond admirably to every call, flinging his great bulk again and again, with accuracy and precision, against the crimson line. If he lacked the dashing, reckless brilliancy that would have made him an ideal player, there was no faltering or hanging back in his steady, dogged plunges.

Perhaps his almost morbid expectation of the worst biased Costa. Certainly, as the second quarter progressed, he seemed to see signs of the slump he dreaded. It was nothing one could really put a finger on; just a touch of slowness in starting off, the barest hint of lowering pressure, as if Butch were growing discouraged at the resistless steadiness of the crimson line.

Tad tried to tell himself that it was all nerves, but the effort brought little consolation or conviction. When the draggled, weary squad hurried off the field for the precious thirty minute intermission, he went with them. In the cramped quarters beneath the stands the smell of arnica mingling with the reek of perspiration, the babel of many voices and the bustling to and fro of trainers contending against that rhythmic stamp of feet and full mutter of the crowd, he stood beside Hartigan while the fullback was stripped of his clinging suit and manipulated by a badgered rubber.

In the little fellow's face was no trace of the carping worry which consumed him. He chatted hopefully, with a cheerful optimism that was the height of art. And when they had all listened silently to Flood's brief, stinging exhortation, he put in another encouraging word or two before the flying minutes sent the team back to the fight, and Costa to the suspense of waiting.

The uncertainty, at least, was soon over. Twice the watcher saw Hartigan hurl his bulk against the unyielding crimson line with splendid skill and disregard of self. Once more, after the kick, he plunged forward with all his great strength, only to meet that same unwavering resistance he

had encountered from the first. Then—he gave up!

Hot-eyed, dry-lipped, Costa sensed the other's mental process unerringly. For full half an hour of grinding play he had toiled, struggled, sweated in vain. Not once had he really broken through the line before him. At intervals it gave a little, but the meager gains had been counted in feet and inches instead of yards; more often there was none at all. And now, returning keyed up and refreshed from rest and rubbing, he found that resistance even firmer and more unshakable than before. It was like bucking a stone wall. Swiftly it stirred up that discouragement of other days, that sense of hopeless, helpless impotence which laxed his muscles and chilled his spirits with the deadly fallacy. "What's the use of trying to accomplish the impossible?"

But, oh, the pity of it! Costa's hands clenched as he stared across the trampled field. If Butch had only held on a little longer! Couldn't he realize that the other men were just as fresh as he—just as keen and determined and resolved? Didn't he know that at any moment success might crown persistent effort and the line give and actually shatter before his dogged plunges?

Fierce anger gripped the little chap, flaming in his eyes and making him long to fly at the hulking quitter out there and shame him into a realization of his cowardice.

It ebbed quickly, leaving him cold and remorseful. It was not Butch's fault, but his own. He ought to have guessed that this would happen; he should have known better than to force his friend into a false position where he bade fair to bring ruin and defeat upon the team.

Despairingly Costa gazed upon the havoc he had wrought. It was not so apparent at first because of the swift rallying of the other players. But the slump of the fullback could not help but have its effect. Presently the blue line began to waver and give. Slowly, with many a stubborn stand, they were forced back. Fighting furiously against the inevitable, they were driven into their own territory. And as Tad watched that splendid, hopeless struggle in which every man save one strove with his last breath to beat back defeat, there were tears in his eyes—hot tears of rage and bitter self-reproach.

Now and then one of the human machines gave out abruptly under the strain, and a substitute was hustled in, but still the crimson line swept on. Presently the thirty-yard line passed under their triumphant feet; to Costa, the tall, slim, white goal posts loomed horribly near. Breathless, he wondered if the quarter was not almost over. Flood had paused near him, his face set and strained, dampened with sweat. What would he say if he knew where lay the real responsibility for this ghastly weakening? Tad cringed, then gasped joyfully, as at last the welcome whistle throbbed shrilly through his brain.

Play ceased abruptly and the varsity trailed slowly toward the side lines, shoulders sagging, feet dragging wearily. The coach was frowning now, and his cold, gray eyes were fixed on the downcast face of Butch Hartigan with hard, ominous decision.

Tad watched him dully, knowing intuitively what he meant to do. Then, like a flash, a desperate possibility leaped into the scrub quarter's brain, thrusting him forward swiftly to grip Flood's arm spasmodically.

"Jim!" he gasped unevenly. "Don't take him out—just yet! Give me a chance—just a minute to—to go for him.

think I can wake him up. If he doesn't ear 'em up in the first buck, then—run n your sub."

For a long second gray eyes searched lack ones with surprised and doubtful crutiny. Perhaps there was something

"'You quitter!' he grated. . . . 'You white-livered boob!'"

in Costa's strained face to inspire a little confidence. Perhaps the coach was merely thinking of the weakened line of substitutes and ready to grasp at any straw. At all events, he nodded grudgingly.

"All right," he said curtly. "The first buck, though, or out he goes."

Tad caught his breath and for an instant stood motionless. Then, eyes blazing like live coals from out the pallor of his set face, he whirled and leaped at Hartigan.

"You quitter!" he grated, in a voice which was the more expressive for its fierce repression. "You big, white-livered boob! I thought there was a little red blood in your hulking carcass, but there isn't—not a drop!"

He paused momentarily, sucking in his breath. Before that fierce assault, Butch turned white, then red, then white again, and last of all dull, angry crimson. His eyes narrowed; his great hands opened and shut convulsively.

"You *are* yellow!" railed Costa—"yellow all through, you coward, Jove! If——"

"Cut that!" snarled Hartigan furiously. "Blazes! No man ever called me that and no man ever will. Why, you little runt——"

"Won't they, though?" sneered Costa acridly. "Wait! They're all thinking it now and it won't stop there. You quit! You've laid down! You're throwing away the game! You've showed yourself a dirty coward—and yellow!"

V

THE RIGHT SPIRIT

For an instant, as the giant fullback towered above him glaring down with blood-shot, raging eyes, Tad wondered whether he had gone too far and defeated his own purpose. But there was no time for vain regrets.

"Time!" called Flood harshly. "Everybody out—and tear 'em to pieces, boys. It's our last chance."

With a guttural, growling sound in his throat, Hartigan whirled and pounded across the gridiron, the other players

trailing in his wake. Costa's eyes followed him mechanically. He felt fagged out—wilted. As he sunk one knee into the spongy turf an oppressive sense of finality stole over him. To the end of time Butch would remember those insults. Their friendship, which somehow meant more now than it had ever meant before, could never be the same again. And yet Tad felt he had done the only possible thing.

There was a measure of consolation in watching Butch plunge into the first scrimmage. He flung himself against the crimson line as if it were something human which he meant to break if it was his last act on earth. Fiercely, furiously, a being transformed, he led the attack again and again. Thud, thud, thud—crash! he bucked, and at length the solid formation of the enemy quivered, gave a little, stiffened again, and finally broke suddenly, letting through an avalanche of blue-clad players to pile in massed confusion atop the precious ball.

Once more came that battering, resistless charge, and another gain resulted. Now it was the crimson's turn to yield, to back slowly down the field, contesting every inch.

"Once more came that battering, resistless charge, and another gain resulted."

But nothing could withstand the grinding force of that solid blue formation led by a raging giant, who had been stung to life and furious action by the pigmy on the sidelines. From the stands, streaming triumphant blue again, a wild, spontaneous roar swept back and forth across the field where before had been only the barking, rhythmic crash of organized cheering.

Back, back, back were flung the crimson forces; but slowly, for each man fought defeat with the courage of desperation. At almost every minute time

was called while a tattered, limping figure dragged his slow way to one side or the other, passing without a glance the bounding, keen-eyed substitute who ran out as eager for the fray as wolves for blood.

Flushing, tight-lipped, Costa was on his feet now, joy and suspense battling in the eyes that lost not the slightest move of the struggle. Butch was playing football at last, but would he make the goal in time? The broad white lines passed under the multitude of grinding heels with exasperating slowness; the white, beckoning goal posts still loomed far away. Could they make it? Tad dared not think of the time. It was almost up, he knew, but still they must——

"Costa!"

Flood's voice, shrill, insistent, seared Costa's brain like white-hot metal. He whirled and saw the coach beckoning frantically.

"He wants me!" gasped the little fellow as he ran. "I'm going in—at last!"

A whistle blew as he stopped before the autocrat. Out in the field bent backs relaxed. Some of the players glanced curiously toward the sideline, but most of them stood stolidly, legs wide apart, panting.

"Go in!" ordered Flood. "You've got to kick. There's barely a minute left."

Mechanically Costa stripped off his sweater and tossed it aside. "But, who——"

"Hartigan, of course."

Tad turned white. "But Jim!" he protested. "I——"

"You must!" grated the coach harshly. "Can't you see? It's our only chance. There's no time for anything else. To kick properly you've got to be at full. Hustle!"

Without another word Costa turned and ran out toward the waiting men. His chance had come at last, but now he didn't want it. He understood the need, of course. With but a minute left to play, a goal from the field was their only possibility of scoring, and Butch could not be depended upon to make that goal. But Butch would not understand. It would seem as if he was being deliberately pushed aside at the moment of his well-earned triumph—as if he were being unjustly deprived of the glorious finish to his first game, and his last.

Tad pulled himself up sharply. He had reached the battleground. With head high, he reported to the referee, then moved over and touched Hartigan.

"Flood wants you," he said, steadying his voice with an effort.

Butch looked up at him in surprise. He was weary and hollow-eyed, but his face glowed with the undying joy of combat. His mind, still dwelling on that grilling, glorious fight where he had found himself and which he had yet to finish, did not take in a word the substitute was saying.

Even at the repetition he did not stir. The thing was absurd, of course! Flood couldn't mean to take him out now. Tad must somehow have misunderstood. He was still staring at the strained, white face of his chum, with doubt and unbelief plainly written on his own, when from the sideline came the stentorian bellow of confirmation.

"Har-tigan! I want you!"

Dazedly Butch straightened up and moved slowly away. He went like a person in a dream, head hanging, great shoulders sagged. The life and spirit seemed suddenly to have gone out of him. He could not understand; he did not try. He could still feel the thrill of that crimson line breaking before his last irresistible buck. They had gained nearly five yards. Three more charges like that would have

brought a touchdown; yet he had been taken out!

Sore, hurt, bitter against Flood, against Costa who had supplanted him, against the whole vast crowd that witnessed his humiliation, Butch reached the sidelines without once looking back. Someone threw a blanket over his shoulders. He fumbled mechanically for the edges, and finding them, was moving aimlessly away when a hand gripped his arm.

"Wait."

It was the head coach. He said no more, nor did he even look at Hartigan. His eyes veered swiftly back to the field, and Butch, glancing dully at Flood's strained face, found himself following the direction of that tense gaze out behind the line.

Once focused on the field of battie, his attention did not waver. Presently something stirred him inexplicably. Behind the line of broad, bent backs he saw Costa's slight figure looking absurdly slim and small in contrast to his bulking teammates; and suddenly, by some odd freak of memory, a vivid picture flashed into his mind of Tad's expression as he delivered Flood's message. It was not the expression of one joying in his task, and yet the little chap had striven desperately all these years for a chance of playing on the varsity.

Butch was frowning thoughtfully as the whistle startled him into keen attention. He saw the ball snapped back and passed with lightning swiftness to the waiting midget; saw Costa, cool in the face of that surging rush of crimson bodies, catch it perfectly and hesitate an instant. Then, out of the mass of struggling humanity, soared the oval.

It was a wonderful kick. Low, but well beyond the reach of clutching fingers, it arched straight toward the slim, white wands and swept between them amidst a thunderous roar of voices from three sides of the packed arena.

Butch found himself yielding madly with the rest. They had won! Tad's chance had come at last and he had seized it. And when, a moment later—the teams had scarcely lined up and put the ball in motion—the whistle shrilled out the ending of the game, the scales were swept suddenly from Hartigan's eyes.

He understood at last. This had been the only way. His taking out meant no disgrace or humiliation. The sting and bitterness vanished before the glow of pride that filled him. After all, it was he who had made that kick possible.

The avalanche of shouting maniacs pouring down into the field presently resolved itself into an endless line of dancing dervishes, twining in and out around the goal posts, yelling, tossing hats over the bars, beside themselves with joy.

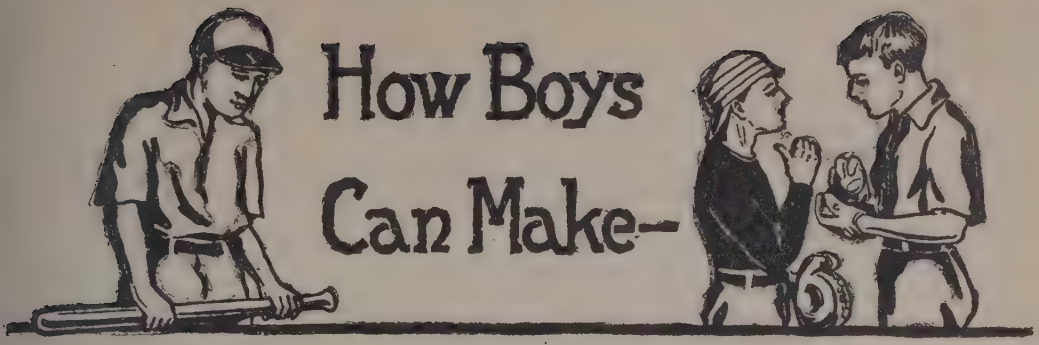
Butch watched them in a curious sort of detachment. The realization had come to him that Tad had done much more than merely kick that goal. He flushed a little, and then his eyes fell on Costa coming toward him through the crowd. The flush deepened; for a moment he stood awkwardly silent, seemingly bereft of speech. But as Tad came on, a slow, embarrassed smile lit up the heavy, almost stolid face.

"Say, kid," drawled the fullback, "that was an awful rotten kick."

The troubled questioning in Costa's eyes was swept away by an answering grin.

"Not half as rotten as the way you manhandled those poor ducks out there," he retorted.

A big hand dropped on a padded shoulder with a touch that was at once caress and supplication. As they turned away together, both men were smiling.



A Baseball Diamond, a Toboggan Slide and a Hockey Rink

BY WALTER PRICHARD EATON

Author of "Boy Scouts of Berkshire," "Boy Scouts in White Mountains," etc.

SPRING is coming! Soon you'll hear the peepers in the meadows, the frost will be out of the ground, and you'll get baseball itch in the palms of your hands. Baseball itch is a very common disease. No cure has yet been discovered. But it isn't dangerous unless it attacks you suddenly in the middle of a spelling lesson, so that you don't hear your name called.

I hope you put some sweet oil on your glove before you stored it away last winter. If you didn't, let some oil soak into it over night before you use it this spring. That will keep the leather from getting dry and cracking.

But what you ought to be thinking of at this spring season is your baseball diamond. If you haven't got a good one, which is kept rolled for you, how can you yourselves make it better?

It's not half so much fun to play on a diamond where the grounders don't roll true, and a bounce shoots off to the left just as you are going to nail it. You can't become so good a player, either, under these conditions.

What can a group of Scouts do to make their diamond better?

In the first place, if your diamond is turf, now is the time to roll it, just as soon as the frost is out and before the ground gets dry and hard. Borrow the heaviest roller you can find, a big horse roller if possible. If you cannot get this, get a hand roller, which you can haul by tying a rope to it and letting half a dozen boys pull. Roll the whole playing field twice—once from home to second, once across at right angles, from first to third. Roll the outfield, too. If your turf is very rough, criss-crossing it with a disc harrow before rolling will help smooth it.

But don't stop there. You can, with a little work, do a lot more than that.

Next get three or four wheelbarrows, shovels, and some wooden rakes. Find a spot near your diamond where you can dig up soil (without stones in it) and bring loads of this soil to the playing-field. Then with the shovels scatter this soil in all the places where the turf is uneven, and spread it down into the hollows with the backs of the rakes. It would have

been better to do this in the fall, but it's all right in spring, if you don't put on too much. The grass will come up through it, or you can scatter some seed.

Be sure, as I said, not to have any stones in the soil. If you haven't any soil nearby free of stones, borrow a gravel screen and screen the dirt before you cart it to the field.

When you've done this, go over the field once more with the roller, and don't play on it till this top dressing has had time to settle. Then you'll find your grounders will bounce far truer than they ever did before.

If you take some more soil, mixed with fine sand—don't be afraid to use plenty of sand, perhaps 2/3 of the mixture—and top-dress the turf next autumn, by another year you'll have a fine, true diamond.

Now, if your diamond is not turf, but dirt, what can you do?

In the first place, you can all line up near home plate, and go right across it, each boy picking up stones into a basket or pail, clearing a path say two feet wide. If there are ten boys, one trip will thus cover a twenty foot strip. By the time you've crossed the entire diamond and back again, you'll see a big difference, and when you play you'll notice a big difference in the trueness of the bounce.

But don't stop here.

Get a heavy beam or plank, the longer the better, and an old strip of carpet the same length. Tack this carpet firmly by one edge along the under side of the beam. Then fasten a rope to either end of the beam, and let two or three boys take each rope, and drag this scraper slowly back and forth across the field, first from home to second, and then from third to first. If your beam is ten feet long, you'll cover a ten-foot path, and it won't take long to smooth the whole diamond.

The Beam and Carpet Scraper.

But you mustn't do this till the ground is dry. If you do it over wet ground you will spoil the surface.

You can keep this drag all summer, and by using it every now and then keep your dirt diamond almost as smooth as a tennis court. If you have some clean, fine sand nearby, put some of that on before you drag the field.

There is one thing more you can do—you ought to do, in fact, even if you do nothing else. That is, to see that all stones are picked out of the paths in front of first, second and third bases, and the home plate, too, so that nobody will be hurt sliding. After the stones are picked out, get a few barrow loads of clean, fine sand, and fill up the approaches to the bases an inch deep with this sand. Then, when you slide, you'll find it much more pleasant than skinning your stomach on stones and mud.

Why play on an untrue field when you can have a true and good one? Spring is the time to begin this work. Do a good turn for baseball in your town!

Your Own Toboggan Slide

ONE of the best investments in winter fun a troop of Scouts can make is to build a toboggan slide. And it will be fun not only for the Scouts, but for everybody. It will be doing a good turn to the community.

You don't need anything more to make a toboggan slide with than a hillside and snowshovels—except, of course, some snow. When you see pictures of a toboggan slide built up on stilts like a chute-the-chutes slide, it doesn't mean that is the only kind of toboggan slide possible. It means, instead, that the people who built that one didn't have the natural hill-slope.

The first thing to do after a heavy fall of snow—say eight inches, though six or even four will do—is to pick out a hill-slope without any roads crossing it, and lay out the line of your slide. You can do this by running a long string from top to bottom, or by sending a toboggan down. If the toboggan goes down first, however, it is very apt to curve and make the subsequent building more difficult.

When the line of the slide has been marked, simply shovel up a bank of snow on either side, the higher the better, the banks being about two feet apart on the inside. The higher you build them, the easier your toboggan will stay in, and the harder you pack them down with your shovels, the longer they will last. If the slope is very steep you will need them two feet high, perhaps. When the slope grows less steep toward the end, they can be lower.

After these banks are built and packed hard, send down a few toboggans well loaded. You will find that they will pack the snow at the bottom of the chute into bumps here and there, and that they will also tend to ride up the banks at certain points.

All you have to do to correct the bumps is to shovel some loose snow into the hollows. At the points where the toboggans try to ride out of the chute, either make the banks higher, or straighten them out, till the error is corrected.

After the slide has been used for an hour, the bottom will be packed so hard, and become so slippery, that the toboggan will go down it like greased lightning. Now, when it is packed very hard at the bottom, if you pour a few pails of water upon it, just before you go home at night, the water will freeze and turn it into lasting ice. More water on the banks will of course harden them, too. Once the slide is made icy, it will resist a pretty hot sun.

Two years ago our boys made a slide on January 2, up in Massachusetts, and we slid on it till the snow had almost entirely melted on all the rest of the

pasture, the second week in March. At the end we had to tug our toboggans home over the grass.

Everybody can use the slide, because it is safe. You don't have to steer, and even small children can go on it, a mile a minute, without danger. The banks hold you in. On days when all other coasting has been spoiled, the slide will still be available, if it has been well made and packed. You are doing a good turn to the whole community by building it, and you'll have the fun of a job in engineering, as well as weeks of the speediest coasting you ever enjoyed.

That's one thing Scouts can do to make the winter more interesting.

Your Own Hockey Rink

ICE hockey, which is good, old-fashioned shinny reduced to rules, has become a major sport in our colleges. It is a fine game, far better than basket ball; it calls for more skill, more speed, and it is played in the open air.

But it has to be played on ice, and if you have no pond, or if your pond gets covered with snow, what can you do?

The answer is—make a rink. It doesn't cost much money; perhaps not any money. What it requires is a piece of level ground, some banks of earth 8 inches or so high, and a supply of water from a big hose.

The smallest rink permissible for ice hockey is 112 by 58 feet. You can make yours as much larger as you like. But large or small, your success will depend upon the kind of soil you build it on.

You cannot build it on soil which is very sandy or underlaid with gravel. *The water will seep through and disappear,* no matter how hard the ground is frozen. You must build on land which contains clay or has a sub-soil of hard pan. So the first thing to do is to pick out a level spot

which investigation shows to be suited to your needs. Of course, it has to be near a hydrant, so a hose can be run to it for flooding.

To find out how tall to build your banks, go to the end which looks higher, and set a carpenter's level on a block six inches through, level it, and then sight it like a gun on a stick held by another boy at the farther end of your rink. The spot where your sight-line hits the stick, of course, will be exactly even with your level. If it is one foot up the stick, that means your banks will have to be one foot high at that end, and six inches high at the other. Do the same with the two sides.

When you have staked out your rink, with the height of the banks marked, you can make the banks by simply digging trenches on the outer side of your lines,

and spanking the inside of the banks firm.

If you are building your rink on the baseball diamond, and don't want to make trenches, lay some old beams along, and put shovels full of clay and loam on the inside.

When your banks are built, and the ground frozen hard enough so that the rush of water doesn't tear up the soil, get the town fire department to turn the hose into the rink late some cold afternoon. An inch or two of water is all you need to start. It will freeze solid. Skate on it a couple of days, till it is cut up, then sweep it, and let a very thin layer of water flow over it. You will once more have fresh, smooth ice.

If it snows, you can easily shovel off a rink only twice the size of a tennis court. You can flood it again and again with a new skin of water, for after the first flooding very little water is needed, and so keep fresh, clean ice all winter. You can always have a rink to practice on, and you will never have to cancel any games with visiting teams on account of snow or unsafe ponds. A night which will not freeze a lake will freeze a half inch of water on your rink.

Of course, the rink is best made in the autumn, but it can be made in winter in the banks of packed snow. Try it and see what an element it adds to your winter sports.

But remember, above all, that to succeed your soil must contain clay, or be underlaid with hard pan. If you try to build on sand or gravel you will fail.

A Boy's Remarks to His Stomach

What's the matter with you—ain't I always been your friend?
Ain't I been a partner to you? All my pennies don't I spend
In gettin' nice things for you? Don't I give you lots of cake?
Say, stummick, what's the matter, that you had to go and ache?

Why, I loaded you with good things yesterday. I gave you more
Potatoes, squash and turkey than you'd ever had before!
I gave you nuts and candy, pumpkin pie and chocolate cake—
And last night when I got to bed you had to go and ache!

Say, what's the matter with you? Ain't you satisfied at all?
I gave you all you wanted; you was hard just like a ball;
And you couldn't hold another bit of puddin', yet last night
You ached mos' awful, stummick; that ain't treatin' me just right.

I've been a friend to you, I have; why ain't you a friend of mine?
They gave me castor oil last night because you made me whine.
I'm awful sick this morning, and I'm feeling mighty blue,
Becoz you don't appreciate the things I do for you! —*Selected.*

Scout Cabins and How to Make Them

BY R. F. McMURRAY
DEPUTY SCOUT COMMISSIONER, BOY SCOUTS OF AMERICA

FOLLOWING a suggestion of Mr. Arthur R. Forbush, Scout Commissioner, Worcester, Massachusetts, I am sending some simple directions for making a log cabin which have proved successful on a number of occasions.

During many years as a forester in western Montana I have built or, more accurately, assisted in building, several log cabins. I say "assisted" because there were always present men who are far better with the ax or saw than I will ever be.

The main thing about a cabin is to have proper material—straight logs with as little taper as possible—and to be handy with the ax.

Most of the cabins I have built or occupied have been constructed far from a saw mill or any other means of obtaining sawn lumber and have been made with no other tools than the ax and occasionally the saw. The principle is to so notch the logs that they will fit together at the corners, making a tight joint. This is rather a ticklish job.

There is another method of putting up a log cabin which depends upon the availability of a few pieces of inch lumber which may not be more than 6 inches wide and need not be surfaced, i.e., planed.

Starting the Job

Let's decide that our cabin is to be 8x10 feet with a door 2 feet 6 inches wide in the gable end which faces the south, and that the roof projects 4 feet over this side. This gives the cabin a much more attractive appearance and adds to the protection. Let us make the cabin 6 feet high at the walls and 7 feet, 6 inches high from floor to ridgepole, which will give the roof slightly less than one-half pitch. We will need an accurate measure (a good tape will do), a sharp ax and a hatchet; two saws—a five-foot crosscut, rigged for two sawyers, and a hand saw—about five pounds of 10-penny nails and a hammer.

I am assuming that the cabin is to be constructed somewhere in the land of the pointed fir and that there is available a supply of logs averaging 7 inches at the small end and having a minimum of taper, by which I mean that the difference in diameters of each end of a given log is very slight.

Careful About Site

Having selected a site for the cabin on level ground near water, but not so near that a possible flood will carry it away (as I have known to happen), a set of

Cabins Built by Boy Scouts

A BOY SCOUT CABIN ON CAMEL'S HUMP MOUNTAIN ALWAYS OPEN TO WAYFARERS

After a forest fire the boys of Troop 1, Waterbury, Vt., obtained permission from the State Forester to build this cabin, way up in the White Mountains, using logs from trees left dead. The cabin is never locked, and many weary mountain climbers have rested there or found it a refuge from storms. (Photograph sent by Scout Master W. L. Boicourt.)

Built by the boys of Troop 16, Baltimore, Md.

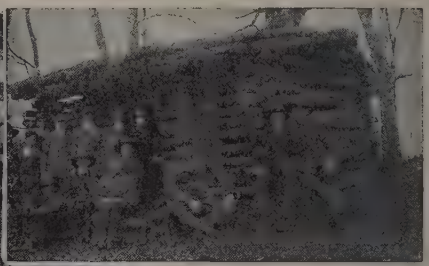
Scout Cabin, Lanesdale, Pa.

Boys Building the Lanesdale Cabin

Kamp Komfort, Troop 1, Port Leyden, N. Y.

Cabins Built by Scout Troops

Chicago Scouts' Big Cabin at Morgan Park, Ill.



Above: A cabin built without nails by Govans, Md., Scouts

At the Left: The well-equipped headquarters cabin of the Twelfth Boston Troop

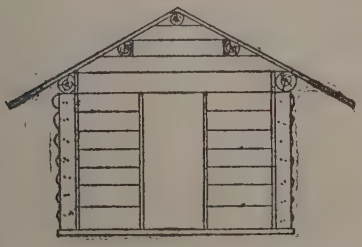
A cabin which Scout Upham built

The boys of Troop 1, Norwood, Ohio, working on their new headquarters under Scoutmaster W. H. Meredith's direction

logs, the largest that have been obtained, should be laid in trenches about 6 inches deep, following the floor plan, a rectangle 8x10 feet. This serves as an underpinning, makes the cabin warmer and prevents small animals from gaining a too easy access.

Of the inch lumber already mentioned ten pieces, two for the door frame and eight for the corners, should be cut, 6 feet in length. Place two of them so that the edge of one overlaps the edge of the other and nail securely. You have something that looks like an old-fashioned hog trough without the ends. Make four of them. These "boxes" form the corners of the cabin and avoid the necessity of the difficult notching.

These boxes are placed upright on the foundation, nailed edge inward, and as the logs, accurately cut to fit between them, are placed one upon another, nails are driven through the ends of the boxes into the ends of the logs, thus binding the structure together and holding it securely. The door frame is put in, in like manner.



Front elevation showing method of building up gable ends and setting roof poles.

When the cabin is finished, a small log may be set up in each of the boxes and wedged or nailed into place. This covers the rough boards and gives the cabin the desirable rustic finish. A window 18x18 inches may be placed in each side.

The Roof

The method of building up the gable ends and setting in the roof poles may be best understood from the accompanying diagram. It is evident that lighter logs or poles may be used in the roof, which may be extended over the door more than 4 feet. Six feet would not be too much, as this porch effect may be roughly inclosed on either side, making an excellent place to stack up fire wood should the cabin be occupied in winter.

There are roofs and roofs. The great point of similarity is their ability to leak. If more lumber is available, by all means put on a board roof and cover it with tarred paper.

The roof *au naturel* is best made by splitting a number of smaller logs, which have been cut long enough to extend 18 or 20 inches beyond the top of the wall, and, with a sharp hatchet, hollowing out the split surface on the order of an eaves trough. Place one set on the roof, hollowed face up, nailing to the roof poles, and place another set with the hollowed face down. This will run off most of the water.

Unless a board floor is used, the dirt of the floor should be scooped out and replaced with 3 or 4 inches of gravel. The unavoidable cracks between the logs may be stopped or "chinked" with moss and mud, but cement is better.

A much better looking and more serviceable cabin will result if care is taken in selecting the logs from straight young trees free from the limbs and of uniform size. If possible, cut the logs and let them season thoroughly before putting them into a cabin.

Of course, no Scout will ever cut any trees or even branches on private land without the consent of the owner.

What's a Boy Scout?

A Glimpse of the Life of the Boy Who "Belongs"

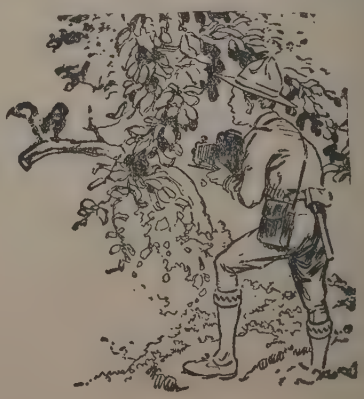
A SCOUT! He enjoys a hike through the woods more than he does a walk over the city's streets. He can tell north or south or east or west by the "signs." He can tie a knot that will hold, he can climb a tree which seems impossible to others, he can swim a river, he can pitch a tent, he can mend a tear in his trousers, he can tell you which fruits and seeds are poisonous and which are not, he can sight nut-bearing trees from a distance; if living near ocean or lake he can reef a sail or take his trick at the wheel, and if near any body of water at all he can pull an oar or use paddles and sculls; in the woods he knows the names of birds and animals; in the water he tells you the different varieties of fish.

A Scout walks through the woods with silent tread. No dry twigs snap under his feet and no loose stones turn over and throw him off his balance. His eyes are keen and he sees many things that others do not see. He sees tracks and signs which reveal to him the nature and habits of the creatures that made them. He knows how to stalk birds and animals and study them in their natural haunts. He sees much, but is little seen.

A Scout, like an old frontiersman, does not shout his wisdom from the housetops. He possesses the quiet power that comes from knowledge. He speaks softly and answers questions modestly. He knows a braggart but he does not challenge him, allowing the boaster to expose his ignorance by his own loose-wagging tongue.

A Scout holds his honor to be his most precious possession, and he would die rather than have it stained. He knows what is his duty and all obligations imposed by duty he fulfills of his own free will. His sense of honor is his only taskmaster, and his honor he guards as jealously as did the knights of old. In this manner a Scout wins the confidence and respect of all people.

A Scout can kindle a fire in the forest on the wettest day and he seldom uses more than one match. When no matches can be had he can still have a fire, for he knows the secret of the rubbing sticks used by the Indians, and he knows how to start a blaze with only his knife blade and a piece of flint. He knows, also, the danger of forest fires, and he kindles a blaze that will not spread. The fire once started, what a meal he can prepare out there in



the open! Just watch him and compare his appetite with that of a boy who lounges at a lunch counter in a crowded city. He knows the unwritten rules of the campfire and he contributes his share to the pleasures of the council. He also knows when to sit silent before the ruddy embers and give his mind free play.

A Scout practices self-control, for he knows that men who master problems in the world must first master themselves. He keeps a close guard on his temper and never makes a silly spectacle of himself by losing his head. He keeps a close guard on his tongue, for he knows that loud speech is often a cloak to ignorance, that swearing is a sign of weakness and that untruthfulness shatters the confidence of others. He keeps a close guard on his appetite and eats moderately of food which will make him strong; he never uses alcoholic liquors because he does not wish to poison his body; he desires a clear, active brain, so he avoids tobacco.

A Scout never flinches in the face of danger, for he knows that at such a time every faculty must be alert to preserve his safety and that of others. He knows what to do in case of fire, or panic, or shipwreck; he trains his mind to direct and his body to act. In all emergencies he sets an example of resourcefulness, coolness and courage, and considers the safety of others before that of himself. He is especially considerate of the helpless and weak.

A Scout can make himself known to a brother Scout wherever he may be by a method which only Scouts can know. He has brothers in every city in the land and in every country in the world. Wherever he goes he can give his signs and be assured of a friendly welcome. He can talk with a brother Scout without making a sound or he can make known his message by imitating the click of a telegraph key.

THE SCOUT OATH

On my honor I will do my best:

1. To do my duty to God and my country, and to obey the Scout Law;

2. To help other people at all times;

3. To keep myself physically strong, mentally awake, and morally straight.

THE SCOUT LAW

1. A SCOUT IS TRUSTWORTHY.

A Scout's honor is to be trusted. If he were to violate his honor by telling a lie, or by cheating, or by not doing exactly a given task, when trusted on his honor, he may be directed to hand over his Scout badge.

2. A SCOUT IS LOYAL.

He is loyal to all to whom loyalty is due: his Scout leader, his home, and parents and country.

3. A SCOUT IS HELPFUL.

He must be prepared at any time to save life, help injured persons, and share the home duties. He must **do at least one good turn to somebody every day.**

4. A SCOUT IS FRIENDLY.

He is a friend to all and a brother to every other Scout.

5. A SCOUT IS COURTEOUS.

He is polite to all, especially to women, children, old people, and the weak and helpless. **He must not take pay for being helpful or courteous.**

6. A SCOUT IS KIND.

He is a friend to animals. He will not kill nor hurt any living creature needlessly, but will strive to save and protect all harmless life.

7. A SCOUT IS OBEDIENT.

He obeys his parents, scout master, patrol leader, and all other duly constituted authorities.

8. A SCOUT IS CHEERFUL.

He smiles whenever he can. His obedience to orders is prompt and cheery. He never shirks nor grumbles at hardships.

9. A SCOUT IS THRIFTY.

He does not wantonly destroy property. He works faithfully, wastes nothing, and makes the best use of his opportunities. He saves his money so that he may pay his own way, be generous to those in need, and helpful to worthy objects. **He may work for pay but must not receive tips for courtesies or good turns.**

10. A SCOUT IS BRAVE.

He has the courage to face danger in spite of fear and has to stand up for the right against the coaxings of friends or the jeers or threats of enemies, and defeat does not down him.

11. A SCOUT IS CLEAN.

He keeps clean in body and thought, stands for clean speech, clean sport, clean habits, and travels with a clean crowd.

12. A SCOUT IS REVERENT.

He is reverent toward God. He is faithful in his religious duties and respects the conviction of others in matters of custom and religion.

The Daily Good Turn

A Scout is kind to everything that lives. He knows that horses, dogs and cats have their rights and he respects them. A Scout prides himself upon doing "good turns," and no day in his life is complete unless he has been of aid to some person.

A Scout does not run away or call for help when an accident occurs. If a person is cut he knows how to stop the flow of blood and gently and carefully bind up the wound. If a person is burned his knowledge tells him how to alleviate the suffering. If anyone is dragged from the water unconscious, a Scout at once sets to work to restore respiration and circulation. He knows that not a minute can be lost.

A Scout knows that people expect more of him than they do of other boys and he governs his conduct so that no word of reproach can truthfully be brought against the great brotherhood to which he has pledged his loyalty. He seeks always to make the word "Scout" worthy of the respect of people whose opinions have value. He wears his uniform worthily.

A Scout knows his city as well as he knows the trails in the forest. He can guide a stranger wherever he desires to go, and this knowledge of short-cuts saves him many needless steps. He knows where the police stations are located, where the fire-alarm boxes are placed, where the nearest doctor lives, where the hospitals are, and which is the quickest way to reach them. He knows the names of the city officials and the nature of their duties. A Scout is proud of his city and freely offers his services when he can help.

A Scout is a patriot and is always ready to serve his country at a minute's notice. He loves Old Glory and knows the proper forms of offering it respect. He never permits its folds to touch the ground. He knows how his country is governed and who are the men in high authority. He desires a strong body, an alert mind and an unconquerable spirit, so that he may serve his country in any need. He patterns his life after those of great Americans who have had a high sense of duty and who have served the nation well.

A Scout chooses as his motto "Be Prepared," and he seeks to prepare himself for anything—to rescue a companion, to ford a stream, to gather firewood, to help strangers, to distinguish right from wrong, to serve his fellowmen, his country and his God—always to "Be Prepared."

How to Become a Boy Scout

HOW can I join the Scouts? Hundreds of boys ask this question every day.

If you want to become a Scout, the first thing for you to do is to find out whether or not there is a troop organized in your town or city. If there is, you should call on the Scoutmaster of the troop and apply for admission. The Scoutmaster would then tell you just what you would have to do to become a member.

If you live in a large city where there is a Scout Commissioner or Scout Execu-

tive—and nearly every large city has one—it would be better for you to apply to him. He will tell you which troop it would be best for you to join—or possibly he will help you organize a troop of your own

But if there is no Scout organization in your town your problem is entirely different, for you must have a troop organized. The first thing to do is to get a copy of the official "Handbook for Boys." You may be able to buy one at your local bookstore, but if not you can get one from National Headquarters, 200 Fifth Avenue, New York, N. Y., for 25 cents. Read this book carefully.

Next you must talk with your boy friends and get them interested. When you have enough boys to form a patrol—at least eight boys—you are ready to organize.

Your next problem is to get a Scoutmaster. He must be a man over twenty-one years of age whose good character will be vouched for by others. If you have not already found one who is willing to take charge, you must find one, for you cannot become Scouts until you have a man at the head of your troop. Try all your fathers and brothers and see if one of them will not consent to help you out. If none of them will do this, pick out some other man you know, and try to get him interested. Send his name to the National Headquarters and ask them to write to him. In the meantime, show your man that you mean business. *And don't quit!* If you try long enough you will get one.

Probably your troop will be connected with some school or church or other institution. If so, your scoutmaster will see the head man of the institution and explain to him that a troop committee must be appointed. This committee will be composed of three or more men appointed by the proper authorities of the institution, i. e., Board of Trustees, Directors, Executive Committee, etc. If the troop is not connected with any institution the committee should be composed of prominent men who represent the best elements in the community. These men may be selected by the scoutmaster or they may constitute themselves a committee, for purposes of organization, subject to approval of National Headquarters. The Scoutmaster or the troop committee will apply to Headquarters for Scoutmasters' and Assistant Scoutmasters' application blanks, as well as registration blanks. These will be approved by members of the Troop Committee, who will agree to provide a new leader if it should become necessary to appoint one.

The scoutmaster will ask you and the other boys to sign applications for admission to the troop and these applications will be endorsed by your parents. He will send in your fees, which are 25 cents a year for each scout, and your names will be officially enrolled with those of the tens of thousands of other boys who are members of the great organization. You will then receive an official certificate and be entitled to wear the official badges and uniform and will be in a position to begin your progress in scouting and advance through the various degrees. Possibly you will become an Eagle Scout, and thus reach the highest rank in the organization.

Respect for Country

The Scout Pathfinder

BY BELMORE BROWNE

EXPLORER AND MOUNTAIN CLIMBER; AUTHOR OF "THE CONQUEST OF MOUNT McKINLEY"

AN Indian and I were once overtaken by a storm in the wilderness that lies on the headwaters of the Yukon. We were returning to camp through a broad valley that was heavily timbered and cut up by game trails that offered a possible but erratic route through the dense underbrush that divided the numerous swamps.

For the time being we were completely and thoroughly lost. As we had been traveling for twelve hours without food, were wet to the skin by the cold rain, and as night was coming on, we did not relish the thought of a night in the open. In clear weather we would have caught occasional glimpses across the swamps of the mountains that encircled the valley, and in this way kept a correct line to our camp, but as it was we could not see more than fifty yards through the driving mist and rain.

For a long time we struggled aimlessly on until the dim light began to deepen into dusk. At last I began to give up hope and was looking for a partly fallen tree that might serve as a rude shelter and wind break, when the Indian turned with a beaming face and said:

"I ketchum camp!"

I was content to keep silent while we journeyed to camp, and twice thereafter I was able to aid by recognizing a swamp, and a cast moose antler that I had noticed early the preceding morning.

THE REQUIREMENTS FOR THE PATHFINDING MERIT BADGE

To obtain a merit badge for Pathfinding, a Scout must:

1. In the country, know every lane, bypath, and short cut for a distance of at least two miles in every direction around the local Scout headquarters; or in a city, have a general knowledge of the district within a three-mile radius of the local Scout headquarters, so as to be able to guide people at any time, by day or by night.
2. Know the population of the five principal neighboring towns, their general direction from his Scout headquarters, and be able to give strangers correct directions how to reach them.
3. If in the country, know in a two-mile radius, the approximate number of horses, cattle, sheep, and pigs owned on the five neighboring farms; or, if in a town, know, in a half-radius, the location of livery stables, garages, and blacksmith shops.
4. Know the location of the nearest meat markets, bakeries, groceries, and drug stores.
5. Know the location of the nearest police station, hospital, doctor, fire alarm, fire hydrant, telegraph and telephone offices, and railroad stations.
6. Know something of the history of his place; and know the location of its principal public buildings, such as the town or city hall, post-office, schools and churches.
7. Present a large scale map showing as much as possible of the above required information.

The next day when I asked the Indian what he had seen to give him the correct

direction of our camp, he offered all sorts of ridiculous answers.

He had "scented" camp, he had heard a pack horse bell, a "moose bird" had led him—these were some of his explanations.

When I persisted, however, he told me the *simple* truth. Early in the morning of the same day he had noticed a dead spruce that had a queer "burl" or growth in its upper branches. When we were lost we had accidentally crossed our morning trail close to this tree, and having a trained memory he had recognized it. Knowing that he was at last on the right trail he had been able to proceed easily by following the other natural features along the way.

The explanation of his successful pathfinding was simple in the extreme, and yet every similar explanation in relation to finding the way after being lost must be equally simple, for success always hinges on merely remembering some sight or sound.

For the reason that our success necessarily depends on such simple sign posts, it is imperative that we must notice and remember *every little detail* along our trail.

The wilderness pathfinder develops his powers of observation by constant practice. As the average Scout has not these advantages, I would suggest that the following modification of the training that *Kim* went through should be followed.

After two or more Scouts have passed over a certain trail or road, let each Scout write down in correct order a list of the important, or distinctive, features along the route. The Scout who remembers the largest number of important features leads the party until another Scout beats him at the same game.

In the ability to direct strangers to distant points you come to one of the most difficult and important branches of pathfinding.

Nothing is more exasperating than to ask a country man a question and receive an answer that begins in this way. "Wall —yer go down this rud a piece 'n then yer come t'r rud on yer left, 'n then yer go quite a bit further 'n yer come t'r rud on yer right, 'n then bymbye yer can see a hause offt'er the right,—leastwise yer kin ef yer look right smart, 'n then yer go a piece further 'n——!"

This type of answer is only too common, and by asking and answering questions with your fellow Scouts you will soon learn the *correct* method of giving information.

The most important things to remember in giving information are, to leave out the *unimportant* things, and to state the *necessary* details clearly and in their correct order.

You can not lay too much stress on this part of the test, because nothing is of more importance in pathfinding, or war, or business, than the ability to answer questions and give information quickly and correctly, and by learning this lesson when you are a Scout you will acquire the habit by the time you become a man.

The "necessary details" consist of an accurate approximation of distance, and a clear statement of the features along the way that can be easily recognized. In "civilization" the standard of distance should be given in "blocks" or "squares." In the country the standard is given in miles and yards.

You must always remember, however, that your information must always be suited to the intelligence or experience of your questioner.

In judging distance you must depend on experience alone. If you have competed on the track in either the sprints or long

distance runs, you will be already able to approximate closely the distances you are familiar with.

In the wilderness, however, you will find that a trail always seems longer the first time you travel it, and you must make allowances for this fact when giving information. The best method of approximating long distances is by thoroughly familiarizing yourself with your own speed under all sorts of conditions. This knowledge will be of inestimable value to you in pathfinding.

If you have enthusiasm, "stick-to-it-iveness" and a love for the great outdoor world, you will have no great difficulty in learning, but the more you know the more you will want to know, and it is when you have reached this point, that you have begun to be a real pathfinder.

Scouts' Engineering Feat

A REMARKABLE cantilever bridge, built by Boy Scouts of Moscow, Idaho, over the Potlach river, was described and diagrammed in the *Engineering News,* which said: The 24-ft. suspended span consists of two 6-in. logs fastened into grooved bevels at the ends of the 8-in. logs forming the cantilever arms. The anchor arms are buried under a rock fill in inclined holes dug into the banks of the river. The roadway was made by laying cross logs held in place by the longitudinal stringers. Prof. Steinman of the Department of Civil Engineering of the University of Idaho writes:

"Although the bridge was undertaken merely to interest and instruct the boys, it appears to be a practical design. It withstands storm and high waters and is capable of carrying pack-horses and pedestrians." It is doubtful if any other type of bridge of equal simplicity would fulfill the requirements without employing longer or heavier timbers.

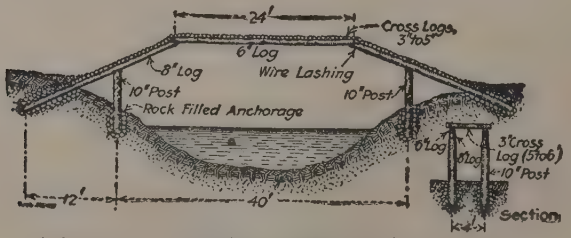


Diagram of a Cantilever Bridge Built by Scouts.
Courtesy Engineering News.

A picture of this bridge, and the Scouts who built it, is on page 25

The Secret of the Sea

BY JOHN FLEMING WILSON

AUTHOR OF THE TAD SHELDON BOY SCOUT BOOKS

"TAD," said Captain Reynolds of the gasoline schooner *Gull,* "would you like to make a trip with me to Dutch Harbor?"

Tad Sheldon's eyes brightened.

"I certainly would," he answered. "But I'm not sure that father would let me go."

The captain's tired old eyes rested kindly on the Boy Scout's face.

"It won't do you any harm, Tad," he said. "The *Gull* isn't as much of a craft as I used to sail, but coming of a seafaring family you ought to make a long voyage. It will do you plenty of good to learn the ins and outs of running a ship week in and week out. And I need you. 'S matter of fact this is my last trip. My eyes aren't what they used to be——"

Tad stared into the wise, dimmed eyes of the old man and he read there the vague trouble of one who is becoming conscious of his years. He knew that not only would the voyage under so skilful a skipper give him needed experience, but that he could really help Captain Reynolds to "clean up" for good. The old, tried seaman could not make many more voyages. This one would be extremely profitable, if carried to its conclusion.

He also realized, looking at him, that weakness always comes and the days arrive when one likes to have someone else's strength to call on, and he remembered a little of the history of this captain and something of his honorable career of forty years. Should he refuse a chance to be of aid to him? Tad's heart swelled at thought of helping the skipper to accomplish his last voyage.

"If dad will let me go, I'll go," he answered.

Captain Reynolds crinkled up his eyelids.

"You'll learn a heap about gas engines and running a schooner," he said. "In fact, it'll be fun—for you."

Tad's father—Number 1 in the life saving crew at Yaquina Bay—listened to his son's plea and consented that he make the trip to Dutch Harbor.

"I want you to *work,* Tad," he remarked. "Remember that taking a ship to sea is not all play. And when you

learn what the sea is, be careful of it. It's nothing to fool with."

Three weeks later when the *Gull* made her last dive beneath the long gray surges of the North Pacific, Tad Sheldon and Will Moore, the engineer, gulped up the water in their throats and climbed up on the little life raft they had cast off at the final moment. Nothing was to be seen of Captain Reynolds or of the other members of the crew.

"The skipper stuck to the wheel so we could have a chance," thought Tad.

Captain Reynolds had steered the *Gull* for twenty-four hours through the heavy sea, knowing that an awkward move or the slightest inattention would result in her turning turtle. He had at last driven her under purposely, thus saving the lives of Tad and Moore, whom he called on deck and ordered to hang to the raft, which was lashed just forward of the mainmast.

"The old man——" gasped the engineer.

"Gone," Tad said curtly. "Say, Moore, you had better balance yourself better or this raft'll turn over, too. It wasn't built for teetering on."

From their little elevation they could see nothing but a constant succession of long, foam-mottled rollers that lifted themselves, seethed towards them and swept on into the squally, misty lee. Tad knew that when the *Gull* went down they had been within eight hundred miles of the Washington Coast. Captain Reynolds had explained each day just how he had reckoned his day's work and their position on the chart. The last figures on the slate stood out plainly before his mind's eye. Since that time they had been driven south by a north-easterly gale, such as often prevails for days at a time off the Aleutian Islands. Also he knew that they had lost little of the force of the Japanese Current, which runs in a strong, steady stream from Kamschatka to our Pacific Coast.

So now he watched the procession of roaring waves with a calculating eye. Their slight refuge was traveling along, steadily being pushed eastward and towards home.

Moore, the engineer, began to groan heavily. In the falling light of the winter day Tad could see that his companion's face was getting grayer and grayer. He understood that fear was at work, the fear that gnaws and eats into a man's heart.

"I know just where we are," Tad said cheerfully.

Moore looked at him a moment and shook his head.

"I know where we are," he returned. "Adrift on a miserable life raft a thousand miles at sea. Nothing to eat and darn little to drink."

"There's water enough in that breaker lashed midship to last us a week and the weather's good and the tanks under us don't leak and we're luckier than the rest, Moore. The old man——"

"The old man he calls down to me when I was still keeping the engines turning 'get up and out while I c'n keep her afloat,'" said the engineer dully. "He gave me a chance. He knew she'd turn turtle the minute he let go the wheel. I guess he was all in, Tad, but he stuck to the wheel till you and I could get this raft clear of its lashings. You and I are saved—for a while."

"He always *would* stick to the wheel. Captain Reynolds wasn't the other kind," Tad replied. "And the longer you talk about being saved and the less you think about being badly off, the better we'll be."

The engineer sat up, clinging with the cramped fingers of one hand to the gray slats of the raft.

"Yes!" he cried bitterly. "On a raft a thousand miles at sea! *Saved?* I wish I had gone down with the *Gull.*"

Tad curled one leg under him and scanned the scene.

He was worried, not so much on his own account—he had an inkling of the secret of the sea—but because he knew that his companion was fast losing his nerve. And he knew that men who lose their nerve slip easily off life rafts and bubble downwards into the unfathomed depths.

It was his simple duty to maintain his own poise and prevent Moore from doing this.

Tad had long trained himself in orientation, and now, hour after hour, he recalled the features of the chart on which Captain Reynolds had marked the *Gull's* position day by day. Gradually he built up a mental picture of the North Pacific —of the Aleutian Islands, of the rugged Alaskan Coast, of the currents that stream across that part of the world.

And as he remembered the details of all these things he scratched them into the gray, salty paint of the pine slats of the swinging raft.

The weather still held fair, though he could see by the run of the swells that a gale was blowing to the eastward. They had ceased to run in long lines. Instead they bumped themselves up into suddenly crested hillocks which rose, boiled a moment, and then fell into heaving fields of foam. Every now and then the raft was tossed perilously on one of these, drenching Tad and the engineer with chill brine.

Yet every hour brought Tad renewed hope. Across his mental picture of the North Pacific ran a great line—the line that marked the Japanese Current.

"It is running always east," he thought to himself. "It makes as much as six knots an hour at times and that's a hundred and fifty miles a day. That means we're going home, even if one can't see any progress by either stars or sky."

As the long dreary hours passed Tad kept on thinking about this. And as he pondered it he understood something of the inevitableness of the laws of the sea. Winds might blow and gales rage across the wastes; and yet the great current steadily flowed on, carrying in its vast embrace their little raft on and on, with ceaseless and uneven motion.

Four days later Tad wakened the engineer, who was drowsing—he had been only half-conscious for fifty hours—with his shrunken hands dabbling in the water.

"We're nearly home," he said. "Tomorrow we'll be right in the course of the steamers bound into Puget Sound."

Moore turned his gray, water-wrinkled face upward and opened his eyes.

"Home?" he mumbled. "How's that?"

Tad gazed out across the windswept sea.

"We're going home," he repeated. "The current is sweeping us inshore. We can't tell that we're moving, but we are. We're six hundred miles closer to the Coast than when the *Gull* went down."

The afternoon sun burned in the west as they drank their last mouthful of water. The surges were running mountain-high, spitting into spume here or sinking into long, low windrows there. The scene was one of absolute and complete desolation.

Tad felt that he could hold out but little longer. He knew that he must keep his mind on but one thing: the Japanese Current was still steadily bearing them on. Its irresistible force was carrying their little raft from the west to the east, from the northern and icy expanse of the Pacific towards home.

And the longer he meditated on this the

more profoundly he understood the lesson that the sea teaches: *patience* and *hope* and *faith*. Patience to endure and hope that all will be well and faith in the enormous and divine force that rules this world and allows us to know a little of the laws under which it works.

As he lay flat on the raft, peering into the swirling depths, on this fourth evening, and saw the dull radiance of the setting sun, he knew that he had now found out the secret of the sea. He had heard men speak of it—his father had muttered it at times. It was the secret known only to those who, in sailors' phrase, "use the sea."

"What it gives," thought Tad, "it takes back. It gives strength and life and the power to live; and in the end it takes back these gifts. The sea is square. Its currents run always the same. Its winds blow always according to law. It is just. It gave Captain Reynolds his living for years. It made him respected and contented. In the end it took him because the *Gull* was unseaworthy and unfitted for this voyage. But the engineer and I are here. The sea taught Captain Reynolds to be brave. So he saved our lives and went down himself, as a seaman should. Now the sea is taking us back home."

It was just dawn when Tad woke up and stared up at the huge side of a steamer which was rolling in the trough a hundred feet away.

"It's the *President*," he said to himself. "Bound from San Francisco to Seattle. And now she's going to pick us up."

Moore slowly opened his weary eyes.

"Yes," he said quietly. "We're all right now. But how can they get us?"

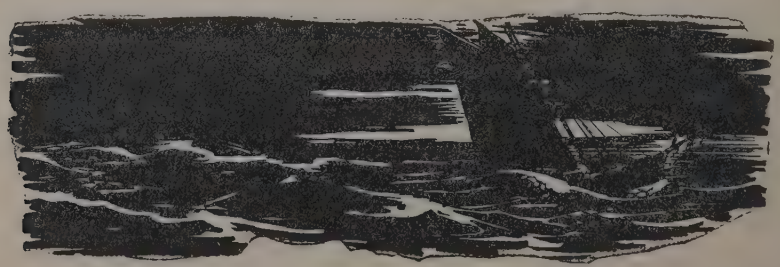
"Look!" said Tad.

On the high fo'c's'le head stood the black figure of a man. He held one arm above his head, with a coil of rope in it. He was yelling down to them.

Tad stood up and waved his hand. The man's arm swung thrice and then was outflung. The coil slowly spun out and past Tad's face swept the heaving weight that carried it. The line snapped across his shoulder. He grasped it and the raft toppled to the sudden pull.

Saved! Learning the secret of the sea, the boy had trusted its winds and currents.

Home! For the sea had been "square" with Tad.



The Muscle and Brain of a Wasp

BY D. LANGE

AUTHOR OF "ON THE TRAIL OF THE SIOUX," "THE SILVER ISLAND OF THE CHIPPEWA," ETC.

IT was on a hot summer day, when a Boy Scout and I were encamped on a northern lake, that we witnessed an interesting episode in the life of a black-and-red digger wasp.

We had just finished breakfast when the Scout noticed in the brush a slender wasp dragging a green caterpillar, an inch and a half long, and weighing about four times as much as the wasp, which measured about an inch in length.

The caterpillar was paralyzed—limp and helpless. The wasp had stung it—a common thing for wasps to do to caterpillars. Seizing it by the neck, so to speak, and straddling it as a small boy straddles a broomstick, the wasp was rapidly dragging her prey through the thick brush of a hillside.

This species of wasp catches live caterpillars and paralyzes them by a sting, deposits them in a hole in the ground with her eggs. When the eggs hatch, the larvæ feed on the caterpillars which the mother has provided. The wasp soon dies after she had laid her eggs, and never sees the young for which she has provided in such a remarkable way.

On the Way to the Hole

Our wasp did not act like a tenderfoot on his first cruise. She maintained an almost straight southerly course from the point where we first saw her, and, during most of the two hours that we watched her, she acted either with remarkable intelligence or with a still more remarkable instinct.

Frequently the last pair of adhesive feet of her prey caught on some stick or blade of grass. Every time this happened the wasp released her grasp, and in a most business-like manner went back and loosened the rear end of the caterpillar. This having been accomplished, she quickly grasped her prey in the usual spot and proceeded as before.

Several times the caterpillar became doubled across a stick. In these cases, too, the wasp wasted no time in futile efforts to pull it off by main strength as an ant would have done; but, in a most matter-of-fact way she went back and took the kink out of her caterpillar and straightened him out before she tried to drag it any further.

Perhaps half a dozen times she left the caterpillar and flew away, apparently to reconnoiter, and to make sure that she was going in the right direction. Every time, except once, she came straight back to her prey after an absence of about a minute, although to our eyes the green worm was very well concealed. Once she ran around several minutes within an inch of it, al-

though this time it lay quite open to our eyes.

We saw her climb up a dead hazel stick for eighteen inches, and, after resting her prey in a crotch, she tumbled to the ground with it. Half an hour later she climbed up a pine to the height of two feet, only to tumble to the ground again. Our interpretation was that instinct bade her to take flight from a convenient perch, but that she found her prey too heavy for flying with it.

At last she came to a knoll below which I had made my fireplace. Here she seemed to become confused and excited, reminding us of an ant who, at times, seems to think that he must drag his prey up one side of an obstacle which to us would be as tall as a church steeple and down again on the other side.

Twice she dragged the caterpillar back a foot from the knoll. Twice she climbed a blackberry vine, only to tumble down again. She ran back and forth on my kettle stick, which I had thrown on the knoll after heating water for our breakfast coffee.

Suddenly she left the caterpillar and ran around for a few seconds.

"She'll never find her nest," I remarked. "It may be a quarter of a mile away, and she is about tired out."

The Scout had more faith.

"Look, look!" he exclaimed. "She has got it again. She's going into a hole with it." And I just saw the big, green worm disappear into a small hole from the opening of which she had removed a small piece of a dead leaf.

Now we understood the apparent confusion of the wasp. She had started on her caterpillar hunt before I walked over the knoll, and before I left the stick on it; and in her absence I had accidentally changed the appearance of the knoll so much that she found it difficult to recognize the spot.

In a minute she came out and scratched and pushed sand over the opening, and then laid a piece of a dead leaf over it. A black parasitic fly was hovering near the nest; but it never had a chance to lay a spurious egg on the caterpillar.

The hole being closed, she flew away, but very soon returned with a short piece of dead grass, which she lay down near the nest. From the next trip she returned with a pellet of earth; then she brought a pebble of about her own weight. When she had also laid down a dead, shriveled leaf near the nest, she seemed to be satisfied that she had done everything possible to conceal the entrance, and she did not return.

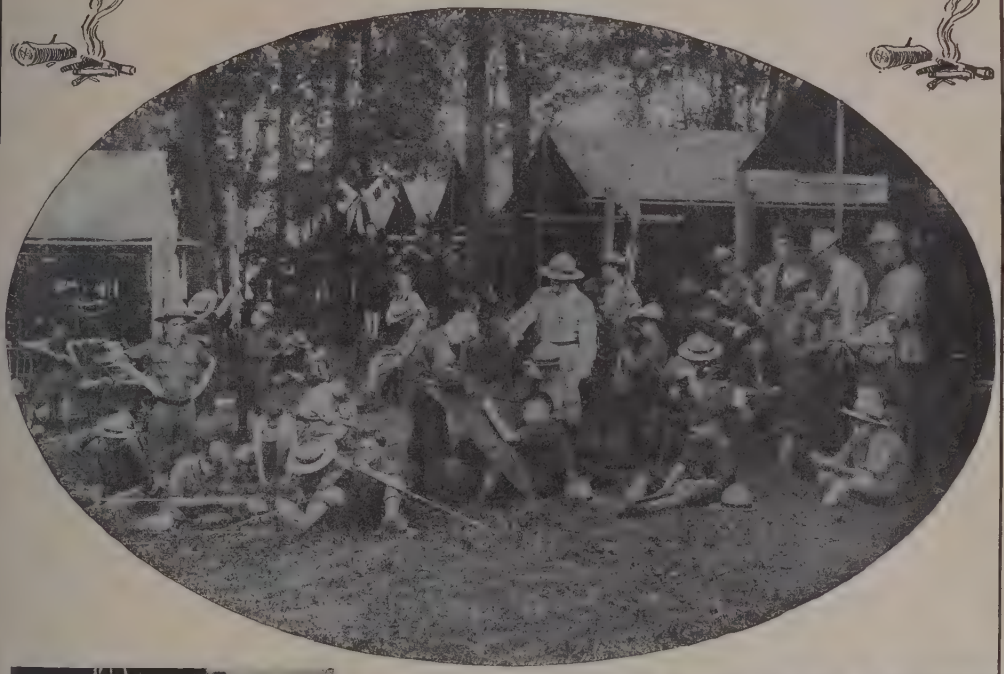
The nest was indeed so well concealed now that we could not have found it again if we had not carefully marked it by placing a stalk of fern near by.

Some Strength

Although the muscular energy of certain insects was not entirely unknown to us, we were surprised at the amount of work accomplished by this slender-bodied wasp, and at the intelligence she displayed. During the two hours that we constantly followed and observed her—and it was hot work in the bright sun of June—she dragged her prey forty-one feet, as measured by our tape line; but the actual distance covered must have been at least eighty-two feet. In round numbers, she dragged a caterpillar, four times her own weight, for a distance of a thousand times her own length.

If a six-foot man, weighing a hundred and fifty pounds, would do a similar amount of work in two hours, he would

With the Scouts in Camp



Reveille, at Sunrise, in a Scout Camp at Norwalk, Conn.

DAN BEARD'S WOOD-CRAFTERS AT WORK

Showing every boy busy, at one fascinating thing or another, during the eight weeks of their course at Culver Summer School under Mr. Beard, National Scout Commissioner. Culver was the first big school to make a "degree" in the Boy Scouts a necessary step to a "degree" in the school.

An "Altar Fire." You can cook on this without "breaking your back"

A Scout Is Cheerful—and a Brother to Every Other Scout

In the World of the Insects

Wasp Using a Stone as a Tool to Tamp the Earth over her Hole.

Thorns Which Are Ants' Nests.

The Enormous Termites' Nest.

Electric Light Bug.

Water Strider.

The Crayfish.

have to drag the 600-pound carcass of a steer a mile and a quarter through a windfall in a tamarack swamp and climb to the top of a 200-foot pine with it. If he did not like the idea of dragging a fat beef, he might rope up five two-bushel sacks of wheat into a convenient pack and try his strength on that.

Inside Facts About the Winter Habits of Some Humble Water Folks

BY D. LANGE

ALIVE Scout knows which birds go south in winter and which ones remain in the north. He probably has also some idea as to the whereabouts of some fishes, and knows that several kinds may be caught by fishing through the ice.

But where are the frogs, the crayfish or little fresh-water crabs, the sluggish clams, the quick-darting whirligig beetles, the odd little water boatmen, the water striders, the black giant water-beetles, the pinching bugs or electric-light bugs, of which the girls are so afraid?

Some Scouts may wonder that all these creatures should live in lakes and rivers, and perhaps it may seem more wonderful to find that most of these insects mentioned are not only expert swimmers and divers but most of them are also bold aeronauts, who leave the water and fly miles overland to other streams, lakes and ponds. Whenever a new lake or pond is formed the water insects find it long before pike, bass and pickerel manage to reach it.

Where Crayfish Hide

If you turn over stones, pieces of wood and rushes on the edge of the water in early November you may find the crayfish in winter quarters. He lies flat on his stomach, so to speak, with his tail doubled up under him. You can catch him by quickly thrusting your hand in behind him. Some crayfish probably hibernate in holes and others retire into deeper water and spend the winter under tufts of weeds.

You may find some crayfish with bunches of little black eggs attached under the tail. These eggs are carried about by the female all winter and do not hatch until early spring, when you may find dozens of tiny papoose crabs attached to the mothers.

Most of the water creatures seem to be reluctant about going into winter quarters, for in fine weather both frogs and crayfish temporarily leave their hiding places to have a last look at the sunny world. After thin ice had formed in November, I have found dozens of crayfish that had thrust themselves upon thin clear ice. They had not been able to find their way back into the water and lay frozen dead on the ice.

Many frogs I have also found on thin ice, hopping and sliding about in great perplexity, evidently being unable to understand that the liquid world of frogdom had become solid overnight. These puzzled frogs, however, managed to dive back into the pond near the shallow edges, where the sun had melted the ice, and

where they had come out as if to take a chance at catching just one more bug before burying themselves for their long sleep in the mud and under stones.

On warm nights the big beetles, the electric-light bugs, the little boatmen and others fly about from one body of water to another. On these journeys they are attracted and confused by the bright electric lights of our cities, just as migrating birds are attracted by the lighthouses, and very often one may find hundreds of such creatures, large and small, buzzing around the electric lights or crawling about on the street below.

Once, on a warm sunny day late in fall, I witnessed an accident such as happens to millions of the curious little water boatmen, who dart about in the water, using a pair of extra long legs as a man uses the oars in a rowboat.

It seemed as if all the little boatmen around the city had taken a daylight flight for an autumn picnic or were on a grand scouting tour for the best winter quarters. On this tour they mistook the sprinkled asphalt pavement for quiet sunny ditches and alighted on the streets in millions. The film of water at first held them to the pavement; they became confused and tired themselves out in vain efforts to take flight. Next morning the streets were covered with millions of little dead boatmen.

Can Water-striders Think?

Very odd creatures are the water-striders, looking a little like daddy-long-legs walking on the water. They actually do walk on the surface of ditches, and quiet places in rivers and ponds, without ever breaking the surface film of the water. If you submerge them, a white film of air adheres all over their bodies and they come up as soon as they are released. They live on small insects that fall into the water. One can form an idea about the number of insects falling into the water by remembering how soon some little bug will blunder into the camper's tea or coffee, although it had a whole country to hop and fly in.

On a canoeing trip, some time ago, I saw a water-strider do something which almost made me believe that an insect can think.

The strider tried hard to run against the rapid current of a stream. About half a dozen times he tried it, but again and again the current threw him back. After numerous futile efforts he left the water and walked up on dry land past the rapid current to the quiet pool above, a distance of about two feet. It was one of the most surprising things I ever saw an insect do. The incident occurred on the Kettle river in Minnesota and impressed me so much that I wrote a detailed account of it in my note book.

I have learned very little about the winter quarters of the water-striders. Perhaps the Boy Scouts can find out about it by themselves.

Ever Find a Frog in Winter?

Of frogs I could tell a number of curious stories, both about their summer and their winter life. They are not nearly as dull as many people think they are. It takes a pretty good Scout to find a frog during the Christmas vacation. If you don't believe it, try it; and if you find one, don't throw him out on the snow to freeze to death, but leave him or put him back where you found him.

With that rule strictly observed, I recommend a mid-winter frog hunt to any

live patrol of Boy Scouts. If you know where to look you may find them; if you don't, you'll have some fun and might not be able to earn a day's wages at five dollars a frog. But the rule should be that one frog counts as much as 500. Boy Scouts should not revive the abominable hunts which are made by some men who call themselves sportsmen, but deserve a very different name.

Cannibals, Torturers, Robbers and Slaves Make Up Amazing Insect Communities

BY R. L. HONEYMAN

THERE are over 300,000 species of insects—almost all with some queer, interesting ways. Scientists say that bees and ants are the most intelligent citizens of the insect world. Bees are fairly well known, but termites, often called white ants, are almost strangers.

They are commonest in the tropics, where they build houses (of red earth, vegetable matter or other material) large enough to form a part of the landscape. These great hills are often covered with vegetation, and are inwardly pierced in all directions by corridors leading to the chambers of the tenants. The queen who rules occupies a royal suite, situated below that of her subjects. She is protected by "soldiers," who have huge heads and murderous jaws, which in case of attack move up and down like a pair of shears, snipping off the heads and legs of enemies.

The Cannibal Termites

Sad to say, the termites are cannibals! When any member of the colony shows signs of illness, he is immediately eaten—before he has a chance to die a natural death! The cast-off skin of every member is also eagerly seized. When one is ready to moult, he is instantly surrounded and assisted by a crowd of friends and relatives, who devour his old clothes as fast as they leave his body!

There is some reason to believe that if a quarrel breaks out under the home roof the majority interfere and part the disturbers.

It has been proved that the termites make various sounds with their mandibles, although the noise of their clicking is too delicate for the human ear to catch.

Although termites usually pass for ants, they do not practice the remarkable habit of some ant species of keeping slaves and domestic animals. There is one species of ant which will rob the nest of another species and carry home the helpless pupæ, or eggs. When these mature the robbers cease all work, forcing the little strangers to make nests, bring food and even feed them. In case of a change of residence, the slaves carry their owners to it in their mouths!

Ants also keep honey-cows. These are tiny insects called aphids, who occasionally produce a drop of honey. The ants build stalls of earth around the leaf on which the cows happen to be feeding, and

when they have eaten enough to make a full "honey-pot" they are milked and relieved of their burden by the ants, who are ravenously fond of the sweet fluid.

Joy-riding On an Ant!

There are many kinds of beetles who make their home with the ants, and among the queerest is the Lepismid, or fleet-foot, who looks like a wood louse with a tail like a fish. This gentleman lives by stealing food from the ants as they are passing it to each other. His long legs enable him to escape before the outraged family can overtake him. But if he is overtaken, as sometimes happens, he is killed on the spot.

Another ant guest is a tiny mite with a big name (antennophorous), which attaches itself to the ant's head or abdomen and lives there until it happens to see a better "tenement." Horny cups on its feet, filled with a sticky substance, enable it to stick fast, and an ant will carry two or three of these mites without objection.

Near at hand may also be found a tiny, blind cockroach, thriving on a mushroom growth. They frequently mount the ant's back and ride for a long time. As far as scientists can discover there is no reason for this except recreation—it is a sort of joy-ride.

Parasitical Flies

Passing to the fly family, among the most curious specimens is the Hippoboscida, or bird tick, which begins life with wings and clings to the bodies of birds until ready to migrate to something larger, such as a deer. When they finally settle on a host they bite off their wings.

The Apocephalus, sit-o'-my-head, is a very lively fly who darts after a big black ant and lays eggs on his neck. When hatched the grub bores into the ant's head and eats out the brain. When the head drops off the maggot inside strolls around, carrying his residence with him like a snail. Soon, however, he becomes tired, turns into a pupa and sleeps. When the nap is over he comes out a fully developed, wicked little fly, like his parents.

Little Murderers

The hump-back flies (Pharidæ) are hatched in beehives and live on the eggs and larvæ there. When mature, they pounce out like hawks upon moths, beetles, butterflies and grasshoppers—but their favorite prey is bees. They have a hard, tubular beak that is used to lacerate their victims; after which they suck the body dry. They are little murderers who work industriously all day. Sometimes the ground in the vicinity of a hive is strewn with empty bee-shells, and there is nothing that bees, or bee-keepers, dread more than the so-called, robber fly.

The Tachina flies—and some other kinds—hand over their victims to torture in the hands of the next generation. They lay their eggs on caterpillars and locusts and stick them there with a gluey substance. A maggot hatches and bores its way through the skin into the body, where it lives by slowly consuming some vital organ that finally causes the death of the caterpillar and in time releases another fly.

This mere glimpse at insects shows that their world is much like our own in miniature, and in many respects just as wonderful. Thorough study of insects will bring out a long list of facts that are truly amazing.

How the English Chief Scout Reads Tracks

BY LIEUTENANT-GENERAL SIR ROBERT S. S. BADEN-POWELL, K. C. B.
CHIEF SCOUT OF THE BRITISH BOY SCOUTS

WHEN I am walking along a road or path I generally do a little tracking every day, because it is only by constant practice that a fellow can learn tracking or can keep his eye in when he has learned it. It is quite easy and simple to do, only Scouts often do not think of doing it.

Here, for instance, is what I did this morning. There is nothing wonderful in it, but Scouts will understand all the better that such practice should be an every-day matter, and not merely attempted on some great occasion. It is bound to be a failure then if it has not been regularly gone in for before.

Today's practice was on an ordinary country road, dry and hard, with a slight layer of dust in most places; up and down hill; between high hedges; no wind (wind, you know, soon flattens out tracks in dust and makes them look much older than they really are).

At about eight o'clock in the morning, as I passed from one field to another I crossed the main road at the point where it reached the top of a hill.

I read some news on the ground, and this is what it said:

"Mrs. Sharp is ill this morning; and Johnny Milne has been to the railway station to fetch some newspapers."

This was how I got at it.

There were only two fresh tracks. One was of a boy walking, and the other of a bicycle.

The boy's footmarks showed a nailed boot, not big enough for a man, walking along the road which led to the school and to the railway station. It was Saturday, a whole holiday, so he could not be going to school; he would, therefore, be going to the station.

Why to the station? Because at 7:33 the train came with the newspapers, and there were his tracks going back again. (*They occasionally overtrod the outgoing footprints.*)

One boy in the village, Johnny Milne, was employed by the shop to fetch the papers from the train.

So if the train were punctual he would have passed this spot on his way back about twenty minutes later; that was at seven minutes to eight.

Now the bicycle track showed that the machine was ridden up the hill (*the track zigzagged along the road, whereas if it had been running down hill, it would have gone pretty straight*), the rider getting very tired (more zigzag) near the top. There the bicycle had stopped (*sharp turn and slither of the wheels in the sand*) and the rider had got off to rest. It was a woman (*small foot, no nail marks, small, sharp heel*).

She had stood a short time (*footmarks on the top of each other*), and had then remounted and ridden on. She had passed this spot between 7:15 and ten minutes to eight. (*The bicycle tracks had passed over Johnny Milne's outgoing track of 7:15, but his returning footmarks of ten minutes to eight overtrod the cycle tracks, so they had been made since it passed.*)

What lady would be cycling along this road at that hour of the morning? (*A rather stout lady, too, judging from the breadth of her foot and the fact that she had to rest on arriving at the top of the hill.*)

The road led to a cottage where lived Mrs. Sharp, who was not very well.

The lady must surely be Mrs. Clarke, the matronly district nurse, on her bicycle going to see Mrs. Sharp; and she was still there (*as there were no return wheel marks*).

That is how a Scout can read news from the ground, and though this morning's news was not important, it is always worth while to practice reading, because some day you will probably want to pick up some important information, and it is only every-day practice that will enable you to do it.

It's a Way We Have in the Scouts

"How is it that I can tell a Scout at once when I see him, even when he is out of uniform among a lot of other boys?"

That is what a gentleman said to me the other day.

"The Scout," he continued, "does not slink by me on the road, pretending not to see me, like the ordinary shy boy, but he looks at me like a man and gives a salute or a 'Good morning,' and walks past like a Grenadier.

"And if I speak to him, he doesn't hang his head and murmur something I can't hear; he holds his head up and speaks out, and says what he means. That is what I like about a Scout."

So do I—and so do many other people, for very many have said the same to me, and I am glad to hear it.

What Is a Gentleman?

Many people are inclined to think that the word "gentleman" means a man who was born rich, and that a boy brought up at expensive schools and colleges must therefore be a gentleman when he has grown up. But this does not always follow.

A fellow who is lucky enough to have been brought up in that way has certainly better chances of being a gentleman than many a poor boy has, but at the same time a poor boy can be just as good a gentleman as a rich one.

A gentleman is just what the word says: he is a man, but a gentle man, not a rough, bullying, coarse customer, but a fellow who, though big and strong, can be kind and chivalrous and helpful to other people.

As good a sample as any of a "gentleman" is the London policeman. He is at all times courteous and helpful to others, even to the extent of being ready to risk his life at any moment to save people in cases of accidents, or to protect them against rough handling, and he treats rich and poor, old and young, with equal attention and patience, and good humor.

Scouting in the Antarctic Ice Fields

BY SIR DOUGLAS MAWSON

All Scouts take their hats off to men who do things worth while. Here's one—Sir Douglas Mawson, a real Scout. He was a member of Sir Ernest Shackleton's expedition which sought the South Pole, and later organized and led the Australian Antarctic Expedition, which made a scouting trip in a frozen land whereon no human being had ever set foot. The explorer mapped out over 2,000 miles of coast line and discovered an area of approximately 1,000,000 square miles that is rich in coal, and also has deposits of copper and gold. In recognition of the service he rendered to science in this way, he was knighted in 1914 by King George V.

As a boy every moment that could be spared from his regular duties he spent in the Australian bush. Months of every year he camped out in the open, and to this he attributes his splendid physical condition which enabled him to make the thrilling dash of 311 miles over Antarctic fields of ice.

PREPARING for duty in the trying climate of the Antarctic is not a matter of weeks or months, but one of years. It requires a strong constitution that can come only of clean living and careful training, a study of the methods of former expeditions and a certain amount of courage that comes from confidence in self.

There are many things connected with the expedition that I would like to talk to boys about, but the most important, probably, is physical fitness.

With two companions, Lieutenant Ninnis, of the Royal Fusiliers, and Dr. X. Mertz, I left our main base for a scouting journey on sledges. We had traveled 311 miles over sharp, jagged ice in the face of terrific gales and hurricanes, when suddenly, without any warning, Ninnis and his dog team fell through the ice roof of an unfathomable crevasse.

Not a sound came up out of that awful hole in answer to our repeated shouts, and after hours of repeated calling I read the burial service. I well recall, when this ceremony was over, the happier look on Mertz's face and his short "Thank you" as he shook my hand.

We then took stock of our provisions (most of the food had been on Ninnis's sledge) and found that by cutting down the allowance to a few ounces per day, for Mertz and myself, we had enough for about two weeks. We had no food at all for the remaining dogs, and being about sixty days tramp from camp we turned about and raced for it.

It was then that physical fitness told. Bucking the strong winds and heavy blizzards, one by one the dogs died, and the little meat that clung to their bones was divided equally between us. The short food allowance soon began to show its effect in the lagging steps of Dr. Mertz. He did not complain, but when he finally refused the dog meat, saying it did not seem to agree with him, I knew he was in a bad way, and prepared and gave him the remaining store of regular provisions.

This seemed to buoy him up, and we turned in in our sleeping bags to get a good rest. I hoped to find him much better, and when I awoke I reached over and shook him by the shoulder. There was no response. I uncovered his face and realized my worst fears. Dr. Mertz had passed to the great beyond.

This happened thirty days after the loss of Ninnis, and left me alone with only the half-eaten carcass of one dog for food. I was thirty days' distance from the main base, and my only hope and desire was to get as near to it as possible and cache our diaries on the chance that they would be found by a search party. I did not expect to reach camp alive, but years of training and careful living had given me a ruggedness of constitution that triumphed over the elements and the ravages of hunger.

Methods of Ice Rescue

BY COMMODORE CHARLES E. RAYNOR

Superintendent of the U. S. Volunteer Life Saving Corps

IF you would plunge through the ice to rescue someone who has fallen in, go armed with a rope, made fast to your body, otherwise you will have difficulty in getting back, for when you are below the surface you cannot see the hole.

One way to help a person who has fallen through thin ice is to throw a rope across the hole so that the person may grasp the center of the line or rope. Have someone at the other end if possible. Keep just as far away from the hole as you can.

Another way is to throw a loop to the submerged person, to be fastened around the body below the arms, leaving the hands free to spread out upon and press down on the edge of the thin ice. This helps the person to slide onto the surface.

If no rope is available, use a ladder, plank, pole or fence rail. Even such things as a scarf, coat or lady's fur neckpiece will do—anything that will keep you a few feet from the hole.

If necessary, lie flat on the ice and reach out as far as possible. Let one or more persons behind you do the same, grasping each other to help haul you back.

The life-saver when skating usually wears a belt, made of 30 feet or so of rope, with a knot or buoy-ball, known as a "lemon," at the end.

The United States Volunteer Life Saving Corps uses 100 feet of ¼-inch rope attached to a 10-inch wooden ball, which may be slid across the ice with little exertion.

A Senseless Question

Well-meaning Guy—Oh, I say! Have you fallen in?

Submerged Stranger—Well, you don't suppose I live down this hole, do you?

The Clean Hands of the Secret Service

BY JOHN ELBERT WILKIE
EX-CHIEF OF THE UNITED STATES SECRET SERVICE

CONTRARY to popular belief, the methods of the United States Secret Service demand no apologies. Its operatives must not encourage crime; they must not aid criminals; they must refrain from any act that might be interpreted as participation in the commission of crime. In other words, the Government's man is required always to work with clean hands.

The instructions in this regard are strict and absolute. If the operative fails to observe them to the letter he is immediately recalled from the case and it is abandoned, at least temporarily.

Here is an example that will serve as an illustration:

Some years ago, while at the head of the Secret Service, I sent one of my operatives to Iowa for the purpose of securing evidence against an old man out there, who we knew was issuing counterfeit money. My operative secured a job on an adjoining farm, and finally managed to gain the complete confidence of the counterfeiter. The case against him was all but closed.

In the course of their acquaintance, however, they went to Des Moines together. As they passed a drug store one evening, the old man asked my youngster to go in and buy ten cents' worth of nitrate of silver, which was to be used in plating the coins. This the operative did. When I received his daily report, mentioning this fact, I recalled him at once. In buying the nitrate of silver, he had become an actual accomplice in the crime, although this idea had probably never occurred to him. The case was abandoned for the time being. Later we arrested the counterfeiter while he was attempting to pass his coins, and eventually convicted him.

In this case, you see, the operative was not quick-witted enough to realize what he was doing. If he had been, he would have been forced to find some way out of making the actual purchase without arousing the suspicions of the counterfeiter.

Most of the Government's men are prepared for any emergency that may arise. Here is a case, for example, in which another operative of mine handled a similar situation—handled it differently and successfully:

In South Carolina, a good many years ago, there was a gang of counterfeiters, who were also engaged in moonshining. I sent a young fellow down there for the purpose of "roping" them, placing him as a common laborer under the foreman of a company that was building a dam in the neighborhood. My operative managed to display reckless attributes that attracted the attention of the criminals and made a favorable impression upon them. When

the time was ripe, he became involved in a dispute with the foreman, and after a stormy session was discharged. This demonstration of his supposed character won him an invitation to "come in" with the counterfeiting gang.

Everything seemed working out all right until one evening, when he was informed that he was to pour the molten metal into the molds on the following day; that his turn at the job had come.

Now this operative knew the penalty of participating in the commission of the crime. On the other hand, he realized that if he failed to do as they had ordered, his usefulness would be at an end. He would undoubtedly be suspected. It was a nice problem from every angle.

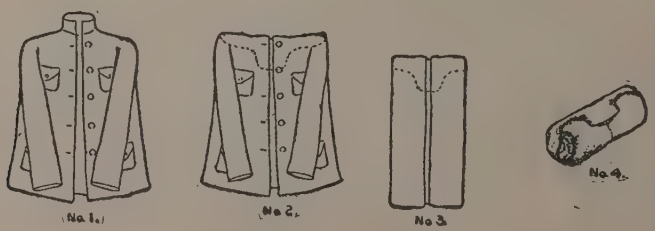
That night, after the others were asleep, he went out into the woods by himself and deliberately mutilated a finger on his right hand—mangled it horribly.

When they called to him the next morning to make ready to pour, he exhibited a bandaged hand, even going so far as to unwrap it and show the raw and ugly wound. It was impossible, of course, for him to pour molten metal when he could not grip the handle of a ladle. Yet the condition of his hurt after the supposed accident precluded any suspicion of his loyalty to the gang. Eventually the counterfeiters were arrested and convicted on his evidence.

It seems to me his success was due to a combination of sheer nerve, of sacrifice to duty, of quick-wittedness, and of a spirit of preparation for the emergency. And he proved, as other operatives before and after him have proved, that it is possible to secure evidence without becoming an accomplice in the crime; that the hands of the Secret Service are not only effective, but clean.

How to Roll a Coat or Sweater

THIS is the "blanket roll" method of rolling coats, sweaters, shirts, etc., in use in the United States army. Lay the coat down, back down, sleeves folded onto body of the coat. Fold *under* the neck and the shoulders. Fold over the side to the required width. Then roll from the tail to the neck, and the folded-under part when pulled around the ends of the roll will hold it without straps. The roll will slip under haversack strap.—G. S. R.



Boy Scouts Around the World

A Trek-Wagon "Obstacle" Race in Montreal.

They take their carts apart, pass the parts through the fence, reassemble the carts and run on.

A Patrol in Austrian Poland, Signaling with Heliograph.

Moro Scouts in the Philippines.

"The first Moro boys ever known to be kind to poor, helpless animals."—From a picture printed in the Outlook

Spanish Scouts Have a Chat with Their King.

Scouts of Troop 1, Robert College, Constantinople, Turkey, watching a camel caravan.

The four boys are Greek, Scotch, Bulgarian and Turk, respectively.

Boy Scouts Around the World

English Sea Scouts Off on a Cruise

Italian Scouts Snapped in Venice

In Sweden

In Denmark

Boy Scouts Starting on a Hike at Fairbanks, Alaska, led by Scoutmaster H. H. Lumpkin

Boy Scouts Around World

BY LUDWIG DALE
NATIONAL SCOUT COMMISSIONER, BOY SCOUTS OF AMERICA

In Norway

THE Boy Scout Movement was introduced in Norway in 1910, largely through the efforts of J. Grottum, a cavalry officer. Within six months troops were formed in all of the principal cities, including Bergen, Christiania, Stavanger, Trondhjen. At present there are about 6,000 members.

The Norwegian Scouts affiliate with the Central Society for the Encouragement of Sports; otherwise the organization follows pretty closely the American idea. A Tenderfoot is called a Recruit. The classes are turned about so that you enter the first and then advance to the second class. There is also a third class, composed of patrol leaders and their assistants.

"Skiing" being the national sport, the Boy Scouts of every class must know how to build a "skihop," be able to make a jump of eighteen feet, know how to render first aid to anyone injured while skiing, or he must show efficiency in rowing or steering a boat. Their badge is a shield, formed by two flaming torches about the Norwegian Lion, with the initials N. G. S. Sentiment is developing, however, in favor of adopting the same general outlines of those of the English and American badges.

Thousands of trees have been planted along the mountain slopes of Norway by the Scouts; in fact, so great is their interest in conservation that certain days are set aside for tree planting and study.

In Sweden

There are two Boy Scout organizations in Sweden: one the Boy Scouts of Sweden and the other the Y. M. C. A. Boy Scouts. The former had in March, 1915, 5,450 members; the latter 1,631, with respectively 510 and 160 Scoutmasters. Of the membership in the former, 451 were first class, 1,388 second and 899 third or candidate; in the latter 200 were first class, 475 second and 845 third. The total membership of both organizations is about 7,000, as compared with nearly 10,000 in 1914. The decrease is due to the uncertain conditions caused by the war; a great number of Scoutmasters have been obliged to discontinue their work for the present, but the belief is general that the set-back is only temporary.

In accordance with the request sent them by Sir Robert Baden-Powell, the Swedish Boy Scouts on April 23rd celebrated St. George's Day. On their own initiative the Boy Scouts of Sweden have decided on April 30th as a national tree planting day. Another interesting development in Sweden is the formation of volunteer first-aid and fire patrols, owning their own equipment, coöperating with the various city departments.

One of the main sources of income for the Swedish National Headquarters is "self-denial week," when Boy Scouts do without candy, gum, ice cream and other luxuries, sending the money they would have spent for these to help in the

supervision and extension of the movement.

Scouts also award Blue and White honor badges annually to men and women who in some special way contribute to the growth and welfare of the organization, or to those who have made a name for themselves in science, literature, art, music, etc. Five Blue and thirty-three White badges were awarded during the past year.

The National Headquarters is in Stockholm. Ebbe Lieberath, of Gothenburg, has been Chief Scout since the Movement was organized.

The Swedish Scout emblem is a drawn bow with a three-pointed arrow. Ever since the beginning of their history, the bow and arrow has been the emblem of liberty with the Scandinavians. The drawn bow is to remind the Scout of his motto "Be Prepared," and the three points recall his duties to God, his neighbors and the Scout law.

In Denmark

The present Crown Prince Frederick and his brother Knud were among the first to join the Boy Scouts of Denmark. This meant immediate popularity and at present the movement has about six thousand members.

The Danish Scouts are intensely interested in nature study and they are amazingly well informed regarding trees, plants, animals, etc. The uniform is English in style, as in Sweden and Norway; neckerchief and shoulder badge must be of the same color within the patrol, and no Scout considers himself completely dressed before he has secured green stocking supporters. This color is national; you will find it on Scouts in every part of Denmark. Lieutenant C. Lembcke has held the position of Chief Scout since the movement was started in 1910.

During the summer, through the initiative of the Danish Boy Scouts, a "Scandinavian Camp" was held. This will be another link in the chain to bind together these historical Northern countries.

In Holland

P. J. P. Metelorkamp, Secretary of the Nederlandsche Padvinders Organisatie—the official name of the Boy Scouts of Holland—has been the chief moving spirit in the work in Holland. After a visit to England in the winter of 1910 he took up the work with the result that now all the leading men and women of Holland, including the Queen, are loyal supporters of scouting.

The Dutch Boy Scouts specialize in truck farming and gardening. In Amsterdam they have leased a number of vacant lots, from the city, and here they raise vegetables, flowers, bulbs, etc. Each section of the city has its own organization, but they are bound together in a hold company or "trust" which determines what to raise and when and where to sell to best advantage. They have also developed a close affiliation with the Board of Health, the Fire Department, Chamber of Commerce and Board of Charity, and have proved themselves of the greatest usefulness, especially since the beginning of the war, when thousands of refugees came into the country.

The organization, equipment and requirements of the Holland Scouts are in all important particulars like those of the United States. The badge is also the same. The official flag is green with the lily in yellow and the letters N. P. O. in

black. "Learn to do" is their watchword.

The Holland Boy Scouts also honor men and women who render especial assistance to the cause of scoutcraft; the token of appreciation being a watch charm in the shape of a swastika emblem with the Scout lily in the center.

It is estimated that Holland at present has about eight thousand Scouts.

In Germany

The "Deutsche Spaherkorps" was founded in September, 1911, in Berlin. It was built entirely on the English idea, with the same uniform, badge and requirements.

An interesting commentary on the feeling between Germany and England is found in the fact that whereas the first German Handbook, published in 1909, was founded on Baden-Powell's "Scouting for Boys," the next editions in 1910 and 1911 tried to do away with everything which would remind one of the English Movement—the excuse being that "a movement patterned after an English ideal can never enjoy the favor of the German people." "Baden-Powell" Boy Scouts, as they were known in Germany, gradually won their way, however, and it is estimated that there were about ten thousand of them the time the war broke out. Since then they have proven themselves worthy of the highest commendation, especially as assistants in the Red Cross work. They are also doing splendid work in gardens, plowing the fields and acting as guides.

In Other Lands

A recent census showed there were 2,065 boy Scouts in India.

In the Hawaiian Islands there are Japanese, Chinese, Hawaiians and Portuguese as well as Americans in the Scout troops.

Eighteen different nationalities are represented in a Scout troop at the American Protestant College at Beirut, Syria.

Hundreds of boys in various cities in China, some far in the interior, are organized in Scout troops and carry on regular scout work.

The boy Scout movement in Japan is growing constantly, there being some 500 boys in the troops of the city of Tokyo alone. There are also troops in other cities and these boys besides attending to the regular Scout program make themselves useful in campaigns against injurious insects, and in learning simple engineering work.

Italy, Greece, Spain, Turkey, South Africa, Australia, various South American countries, remote islands in all the seas—in fact all the nooks and corners of the world have their Scouts.

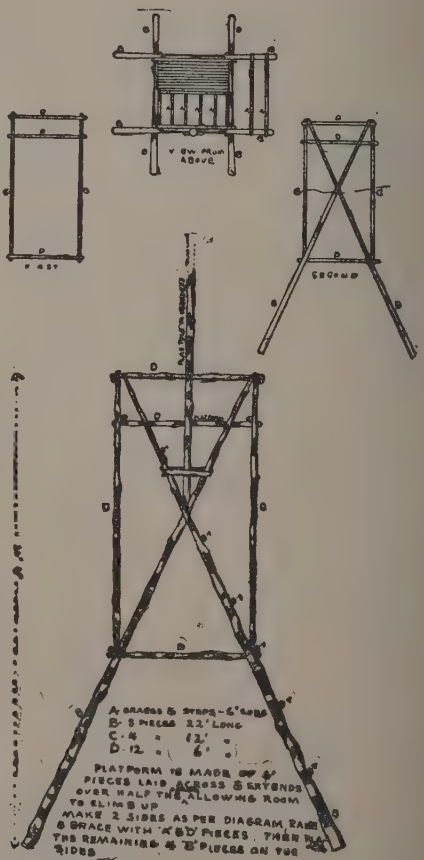
Hundreds of the boys are exchanging letters regularly through the National Headquarters of the movement in New York, making the organization a real "world-wide brotherhood of boys."

Signal-Tower Building

BY A. G. CLARK
SCOUT MASTER, PORTCHESTER, N. Y.

WHAT more picturesque and inspiring sight for the Boy Scout camp is there than a symmetrical, substantial and practical signaling tower? Not only does it add a very great deal to the usefulness and picturesqueness of the camp, but it provides a most interesting work for the Scouts, and knot-tying comes into play in a very practical manner, if the tower is to be lashed.

The tower shown herewith has proven to be a very practical and beautiful tower when well constructed. One important thing to be observed is the proportions. If you want to build a tower larger than the one for which the directions are given you must be careful to see that all poles are larger proportionately. If spiked the tower may be made almost any reasonable height, but if it is to be lashed it would be better to make it smaller, say three-quarters of each dimension given herewith would make about as large a tower as would be well to construct by this method. In lashing the tower, proceed by the same steps as given for spiking, only allow about 3 inches overhang; that is, where two or three poles are to be lashed together at their ends tie them about 3 inches from their ends. When it comes to the flooring, the poles which make the floor should be very securely tied down, as there would be great danger if they were at all loose.


A BRACES & STEPS - 6' LONG
B 8 PIECES 22' LONG
C 4 " 12' "
D 12 " 6' "
PLATFORM IS MADE OF 4 PIECES LAID ACROSS & EXTENDS OVER HALF THE ALLOWING ROOM TO CLIMB UP
MAKE 2 SIDES AS PER DIAGRAM, RAISE & BRACE WITH "C" PIECES. THEN LAY THE REMAINING 4 "B" PIECES ON THE SIDES

The first thing to do is to gather the timber, as follows:

8 pieces 22 feet long, about 5 or 6 inches thick at the base.....(B)

4 pieces 12 feet long, about 3 or 4 inches thick at the base.....(C)
12 pieces 6 feet long, about 2½ or 3 inches thick at the base.....(D)
About 12 or 15 pieces for braces and platform about 6 feet long.....(A)

Now we take two "C" pieces and three "D" pieces and put together as shown in drawing marked "FIRST," after which we attach two "B" pieces as shown in sketch marked "SECOND." Fasten the pieces together by using various sized wire nails. You will require some about 5 or 6 inches long for the lower part of the "B" pieces. Great care should be used not to split the ends of the pieces. This may be avoided by joining the pieces about 3 inches from the ends.

Then make a second side of the tower same as we have just made. Lay these on the ground with bases toward each other 6 feet apart, with "B" pieces on the under side. Then with a long stout rope fasten in the X of the "B" pieces, and a gang of Scouts at the other end of the rope, and two Scouts with feet braced against the base, raise one of the sides, being very careful not to let it fall toward the gang. This should be supported by about four strong Scouts or with guy ropes fastened to trees or stakes on both sides. Do the same with the other side. It will be easy now to fasten several "A" braces on, which will make the tower quite steady for the time being. When sufficiently braced the remaining long pieces, "B," may be placed. You will find this a simple job, and after these are fastened on and a floor is laid on the cross pieces for a platform, you will have a fine tower for signaling by the wig-wag or semaphore.

You must have a flag pole, which should be about 18 to 20 feet long, cut V shape at the bottom, and stepped in the crossing of the two "B" pieces on the side to be used as the front of the tower. This pole should then be braced by two pieces, one being fastened on either side of the pole

If the tower is to be lashed, the above illustration shows the start of the lashing. Pull the rope ends through the loop, tight; then wind them in opposite directions around the poles, fastening with a reef knot.

and to the "B" pieces, as shown in the large sketch. The pole should also be securely fastened to the platform and rail.

If you want to use the tower for wireless telegraphy it would be well to use the pole just described, and to place a smaller pole on one corner for the flag.

In crossing the "B" pieces each piece should be cut out halfway and fitted together so as to make a flat crossing.

Boy Scout Life Savers

Little Stories about Lads who could Think Quickly, and were not Afraid

BY ARMSTRONG PERRY

ONE hot day in July the Boy Scouts of Troop No. 1, Smethport, Pa., went to the swimming hole in Potato Creek to pass their First Class Scout tests for swimming. Scout John L. Welsh started across the swimming hole, but before he reached shallow water he became exhausted and started to sink. Scout Harold Howard immediately went to his assistance and helped him to shore. Scout Welsh was very much frightened by his narrow escape and realized fully the dangerous character of the stream.

That afternoon the troop again went to the swimming hole in charge of the Scoutmaster, Rev. O. Grey Hutchison. The Scoutmaster is a good swimmer, but when he was in the middle of the stream he was taken with cramps. Scout Welsh, in spite of his experience of the forenoon and fully realizing the danger in which he was placing his life, plunged boldly into the stream and swam to his Scoutmaster. Mr. Hutchison had disappeared by the time Scout Welsh reached the spot, but the lad immediately dived from the surface and caught the drowning man by the hair and pulled him to the surface.

"He had about fifty or sixty feet to swim before he reached the place where the rescued man went down," says Mrs. A. Malcolm, who saw the incident. "Thinking that he was going to his sure death and believing that such a little fellow could not handle such a large man, I turned away that I might not witness a double tragedy. I was never more surprised in my life than when they came and told me that John Welsh had succeeded in bringing the Scoutmaster to the shore and that he was still alive. This swimming hole is rather a dangerous one, as it is about fifty yards across, having a center with apparently no bottom to it."

Scoutmaster Hutchison is a man weighing 187 pounds, while John Welsh tips the scale at only eighty-seven.

In recognition of this act the National Court of Honor has awarded Scout Welsh a silver medal.

Diving into danger on the spur of the moment, knowing that the matter will be settled for better or for worse in a few seconds, is quite different from starting on a desperate mission in which cold and fear and fatigue combine with the giant forces of nature to beat down the spirit of courage or crush it forever in the grim embrace of death.

Charles H. Krause and Horace Krause, members of Troop 31, St. Louis, Mo., were entertaining two small boys at Kingsville, Ontario, on August 24, 1914, by tak-

ing them for a boat ride on Lake Erie. A gale was blowing, but they were safe under the lee of a high cliff, where the water was calm. Suddenly they caught sight of a small duck boat, a mile out in the lake. It was full of water and three boys were clinging to the gunwales.

There was no other boat in sight—no time to put their little friends ashore; they must decide instantly whether they would leave the capsized crew to their fate or risk the lives of four to save the three. Without hesitation they steered out into the waves.

Rowing with a strong wind astern requires good seamanship. Lifting three chilled and helpless beings from the water and rowing back a mile in the teeth of the gale with an over-loaded boat took seamanship and other manly qualities which are included in the one word "heroism."

If the shipwrecked sailors hadn't "squealed," it would have been very hard to collect the facts for this story. The "corkscrewing" of the Scoutmaster elicited only this brief statement: "Oh, that's nothing. I only did my duty as a Boy Scout."

Each brother received a Bronze Medal from the National Court of Honor on May 1.

Beaver Brook, at Lowell, Mass., is deep, damp and dirty, especially in April. Walter R. Giffin, a second-class Scout, of Troop 11, is short, slight and snappy all the time.

Two small boys were playing in a boat in Beaver Brook on April 3. Half of them fell overboard. The other half made noise enough to attract the attention of the Scout, who was playing some distance away. A three-hundred-yard sprint, a flying dive into the cold water, shoes and all, and the Scout had the drowning youngster by the arm.

A boy without Scout training probably would have pronounced the little lad dead, for he was unconscious and cold, but Giffin applied artificial respiration until life returned. Then he carried the child to its mother.

The National Court of Honor awarded a bronze medal to Scout Giffin.

All that is needed to make this a regular story is for the hero and heroine to grow up and—but Boy Scouts don't care for all that slush. The rest of the plot is all there—the circus parade with its elephants, lions, tigers, prancing steeds and funny clowns; the crowd with eyes and mouths wide open taking it all in; a sudden swerving of a heavy team in charge of an inexperienced driver. One of the leaders snorts and rears—a child screams and falls directly under the menacing hoofs. An exclamation of horror from the crowd, a mother's frantic cry, a flash of khaki, and a brave Scout is beside the child in her perilous position. An instant later the cruel hoofs descend, but in that instant the Scout has pulled the girl from the jaws of death, escaping destruction himself by only the narrowest of narrow chances.

"Just a Good Turn," he told the mother; "a Scout is expected to do one every day." Would he accept some money? "No, thanks!" Can you beat that? On Circus Day, too!

This happened in Plainfield, New Jersey, on May 8, 1915. The name of the hero is Harvey Kiederling, age 13. The National Court of Honor of the Boy Scouts of America awarded a bronze medal to him.

Stories About Stamps

BY FRANK L. COES

Are you color blind?

Look sharp at the next postage stamp you see. It's got something in it for you—something interesting. Uncle Sam's stamps of the two-cent variety, and in fact of any other value, are not all of the same color. Did you know it? Every stamp you see, if you will think of its color, will help you to learn color values.

But can't you tell colors well? They are hard to distinguish. And they're harder to remember, and to match. In the woods you know a lot of things that you couldn't know except for colors. The green of grass tells whether its roots are in water or out. The colors of birds tell sex and age and kind. Squirrels and mice and snakes have markings that mean something—family traits of both color and form. Flowers have their varieties, and the colors help the quick placing of them. Is the fringed gentian of the same color as the blind gentian? You'll say yes, or no, but are you sure? Is there a difference in the color of white and red oak leaves at the same time of year? Is a mole the same shade as a field mouse? What is the color difference in the barks of the yellow and white birches?

What a lot of questions! Yes, but if you think when you're out hiking or camping, you have in mind a dozen questions to each one I have written above—and if you're a sharp-eyed boy you'll have the answers to all of them right at your tongue's end. Are you a sharp-eyed boy?

If you aren't, you can become one by "practicing with your eyes" while hiking or camping these cool fall and winter days. Or, when you are at home, just look at the stamps on your father's and mother's old letters. You'll find a drawerful in the house somewhere if you ask for them.

And while you are looking for them, think not only about colors, but about the pictures on them. Do you find among them a map of the United States? Why is it there? Do you see one with a woman's portrait on it? If it's a United States stamp it can be only one woman—for only one woman has had her portrait on a United States stamp. Who was it? Who were the great men who had their faces shown on United States stamps? What did these men do?

Then, if you have seen stamps from foreign lands, you know they bear pictures of rulers, noted men, cities, buildings, historic scenes, animals, flowers, suggestions of the customs and dress of the natives, and other things.

If you will arrange them in the order of issue you will find that they mean many things—changes of rulers, changes of governments, wars, currency changes, and other things that you would have to read pages and pages of history to find out. All right there on your stamps.

This is all new to me—as it may be to many of you. A good friend of all boys got me interested. His name is Mr. Frank L. Coes. He has been collecting stamps for years—and learning all about them.

Mr. Coes does not collect stamps simply for the satisfaction of completing a certain difficult set—although of course there must be a great deal of satisfaction in that. His articles about stamps and stamp collecting will show you what a good time he has "riding his hobby." And they will open to you a new world of interest.—THE EDITOR.

I MET a Boy Scout in Paris who was brought up in Birmingham, England. He was a quiet little man, and his "shorts" were the shortest I ever saw. But he was a wonder for information. Here is how he put it: "You see, sir, four shillings are five francs, and a mark is two francs, and a Dutch florin is

a mark or two francs, also. So, if I have a pound note I can make change in all countries for the difference, and usually for a penny to a pound." He spoke four languages in less than five minutes in going through Customs at Havre. I found him to be a member of the public schools and his father let him go across to Paris all alone to see his grandmother. His kit was all on his shoulder, and he was as good a traveler as I ever saw.

He told me afterward that he learned most of his geography and money-value knowledge from his stamp collection. He said the teachers gave prizes for essays on European history, and wound up by stating modestly that he took a first prize for his essay on the pictures shown on the "Bosnia series of 1901."

That was sort of a hard one for me, because at the moment all I could recall was that the I Krone has a view of some building in Sarajevo on it. But to think a boy of fourteen had mastered that and the rest of the Bosnian history of that set of sixteen historical pictures seemed beyond belief.

Stamp "Zoos"

A Scout here has been making a "menagerie" collection. I was really surprised to see the number of animals represented. He has gone so far as to get the queer revenues from the Isle of Jersey with the pretty cows and the Irish revenues for dog licenses, with a greyhound on them. He has not mounted them with any alphabetical idea, but with an eye to beauty, balance, and color. It is very interesting. Our favorite Kookaburra on the Australian 6d., heads the first page. His album leaves are gray bristol board, perforated and bound with a leather cover. He has the funniest running elephant on the cover, done in burnt work.

A Stamp "Menagerie."

Notice the creature shown on the letter-carriers above.

In the upper row, beginning at the left, we have (1) a stamp of the native state of the Straits Settlements, Selangor, which shows a Malay tiger. (2) A North Borneo stamp, showing the Malay stag, called "Rousa." (3) From the Portuguese Colony Nyassa which shows the giraffe at dinner. (4) From Australian Commonwealth, a native bird called "Kookaburro."

In the lower row, from left to right, (1) From Uruguay, showing one of the native cattle. (2) An elephant of North Borneo. (3) A stamp of Liberia, with a simian—but can you tell what kind—orangoutang, gorilla, or what?

Another Scout showed me what he called "the smallest zoo on earth." For a zoo it *was* small—but for a stamp collection it was big enough to make my eyes bulge out. This Scout had in it stamps bearing not only the pictures of animals, but of birds and reptiles, too—and he had them mounted by continents and all carefully lettered.

Finish What You Start

There are any number of groupings you can make with your stamps. Besides animals and birds and reptiles, you have —or can get—men and women of note, presidents, heroes, ships, trains and other means of transportation, and historical scenes.

But whatever odd line comes to mind, or is started—let me plead for completeness. Try to make it not only a finished whole, but each part finished to the limit of obtainable knowledge. It will take some thorough scouting to do this—but that's about the best fun in "stamping." There are the libraries, the encyclopedias, the dictionaries, the stamp catalogs—a veritable forest of facts in which you can either get lost like a Tenderfoot or pick up trails and follow them like an Eagle. Whatever you find, don't rest until you have put it into condensed good English.

Wonderful "Finds" in Stamps

Last summer a boy friend of mine went on his vacation to the seashore near Plymouth. The farmhouse was filled with guests, and some of the boys were sent to a neighbor's to sleep. Boylike, they rummaged in the attic, and one of them found an old butcher's book full of loose stamps and empty envelopes and tied with fish line, shoved under the eaves. A little inquiry showed it must have belonged to a boarder many years ago, as the letters were addressed to a person long lost sight of. These stamps and covers have started one boy well toward a very complete United States set, and the sale and trade of the duplicates has enabled him to practically complete his issues to 1900. I bought from him by exchange a beautiful pair of five-cent orange-brown 1857. So you see youngsters can find things even now.

Paid Her Board With a "Find"

A young lady in Arizona, sent from the East for a lung trouble and with time to burn, suddenly got an idea that some of the old houses must have things to sell, or perhaps china or furniture that had come from the East as part of a '49 load. Trip after trip proved her furniture collecting craze was a failure, but she found in an old chest that at some time must have belonged to an express rider or stage driver, a coin bag practically full of the '61, '67, and '69 issues, divided about half between the first two and the "little square fellows." I have a pair of ninety-cent carmine and black '69 from her find. And I might add that I helped her sell the lot, and it paid her board until she got ready to come home. So the stamp man helped to save a life that time.

Another Wonderful Find

A letter came recently telling of a remarkable find. In lower Delaware, the writer says, he has found a box of old covers and has so far found a pair of

1851—Type I—one-cent and all other values of the imperforate issue up to twelve cents. He sent the pair for inspection. It was clean and whole, quite the best I have seen in any collection. It looks as if this Scout would have enough to sell or trade to pay for his clothes and build his collection, too. A thrifty boy, and if he keeps on as he has started there won't be any doubt of his success.

About Starting Right

Suppose you find some old stamps. Don't hurry to take them off the covers

Stamps with Ships on Them.

Stamps of many lands often carry out similar ideas. Water craft are shown on them. Upper row (left to right, North Borneo, showing Malay dhow, and China, showing a junk; below: British Solomon Islands, piroque, and Zanzibar, native sailboat.

or documents, for they may be (and in lots of cases are) more valuable on the original envelope. If you have determined the value, go at it carefully. Some stamps (Russian and Great Britain and colonies) are printed in ink that runs in water, so don't soak them till you're sure. The best way is to dampen the back of the paper, either with a wet blotter or a brush, and take the paper from the stamps rather than the stamps from the paper. Don't clip the perforated edges. Dry the damp stamp under a plate of glass. Sometimes if the dampening is done carefully, you can leave your old stamp with a good part of the gum on. If you can, so much the better.

Don't mount a stamp that has the remains of several hinges on its back. They come off easily and the stamp looks better mounted right. Use good hinges. They are far cheaper in the end than cheap ones. Hinge-making is quite a trade in itself and the "peelable" hinges have two coats of gum on them, which helps in removal. You'll remove your collection many times if you become really interested, so it is well to prepare in the beginning for possible happenings.

Scouts Can Exchange Easily

Boy Scouts, who are much together in troop and patrol meetings, have an exceptional opportunity to trade stamps. It will be fun and profitable for you to do so. You don't want to keep duplicates. In keeping them you lose a chance to learn a lot of things you'll be glad to know. And at the same time you are perhaps holding back others who need you to move their duplicates as you need them to move yours. It means little extra work to prepare your duplicates so you can exchange—and I think the *Boys' Life* "Lonesome Corner" will help you out.

Of course you have been reading the "Lonesome Corner" every month—and probably you have been exchanging interesting letters with boys in many other States and countries.

Remember that England, France, Sweden and Denmark are all full of real stamp collectors, and a boy of fifteen in England is probably as much an expert as many collectors here at twenty. Mount your stamps in such a way that they will carry safely. Price them carefully in ink. You know of course that there are catalogues of value. Remember, though, that it is possible to secure thousands of varieties at one-half the catalogue prices—or at 50 per cent. discount.

The biggest fun and satisfaction, however, will be obtained by making exchanges. You'll find that for several common stamps, which you may have in abundance, you can obtain a few rare ones that you especially desire to get. Or, if you have rare ones in duplicate you'll be surprised to see how many other desirable stamps you can get for them. Good for your head, too—such exchanges—especially those between different countries.

A Stunt for Scouts

A Scout official down in Harlan, Kentucky, Commissioner Will Ward Duffield, writes that he had started stamp collections among his Boy Scouts in connection with the study of geography, government, etc. Each boy is given a stamp of a country, and he is expected to return it, together with a short essay on the country from which the stamp comes, giving its geographic position, bounding it, describing its area, geographic features, population, resources and government. The boys are having lots of fun scouting around for the information necessary for these essays. One which was written by a boy under thirteen was sent in by Mr. Duffield, and it is a dandy. I wonder how many other boys can do as well. All of you ought to try. It would be a good thing for you to tell your Scoutmaster about Mr. Duffield's plan which is so popular.

Let Other Boys in Your "Game"

You will find that your fun with your stamps will be greater if you take other boys into your confidence. Show them your collection, explain it to them, tell them the interesting stories back of certain ones, recount your buying and trading experiences, let them know which stamps you especially want, and tell them why you want them. The boys you know may not be interested in stamps now, but it is safe to guess that nine out of ten of them will be if you let them in on your "game." And the more fellows playing that game, the easier and pleasanter game it is.

Remember the "Shut-ins"

There's a chance for you do something pretty fine—something you will enjoy very much—if you don't forget the "shut-ins." They are the youngsters, either boys or girls, who are sick or crippled and can't run around like other folks. I expect you can find a boy of Scout age right in your own neighborhood who is sick and hasn't been on a hike for a coon's age. You can't imagine how happy that boy would be if you would take your stamps or a collection of duplicates over to his home for him to study. Help him get "into" them—explain their arrangement in the album, what they mean, where

they came from, and such things. Suggest that he pick out the birds and animals, the famous men and women, or other groups, and then study their colors.

I can't tell you how many collections have had their beginning in a spell of sickness, but the number is large, and a funny thing about them is that these collections seem to last longer than the ones that have been started "for fun." I suppose the reason for this is that the shut-in ones have fewer interests to occupy their attention.

Things All Boys Should Know

IF you do not use your bicycle much during the winter months, cover the plated parts with vaseline. Do not wipe with a clean rag until you want to remove it altogether. If you use your machine frequently during the winter and it happens to get wet, wipe it with a dry cloth when you are through. If it is allowed to dry by itself rust will soon appear.

To make calico waterproof hang it up in a dry place, and give it two coats of boiled linseed oil. Buy the oil ready boiled; two quarts should be sufficient for a small tent. Be sure you use unbleached calico. Canvas may be prepared in the same way and it is much better than calico for weathering the elements.

Do not throw away as useless a small clock which is beyond repair. In case of illness place it on a small table with the patient's medicine. Then after each dose has been given the hands can be moved ahead to show when the medicine is to be taken again.

Perhaps some of you Scouts cannot find enough "good turns" to keep you busy. Here are a few suggestions you can carry out at home. Run over the list and see if you can check them all: Chop and saw wood, clean and scour knives, polish mirrors, door-knobs and silverware; polish stoves, help wash dishes, wax hardwood floors, fill the coal-scuttle, turn the mangle, remove the ashes, mend broken dishes or toys.

Do you know that a little orange or lemon juice put on the blacking brush after it has been dipped in the polishing cream will give a more brilliant shine to boots and shoes?

Linseed oil is excellent for cleaning varnished grained paint. Apply it with a piece of clean soft flannel; rub in well and polish with a soft duster. Use only a drop of oil.

Watch the animals when you are out in the country. They can teach you a lot of things.

Boys Send Letters Around the World

The Scout Movement's Big Letter Exchange Open to All

THE Boy Scout movement is encouraging boys in all parts of the United States to exchange letters with boys in practically all of the countries of the world. To assist them in this exchange, the national organization publishes each month in *Boys' Life,* the official Scout magazine, the names of boys in all lands who desire to receive such letters. Arrangements have been made with Scout organizations in countries in Europe, Asia, Africa and South America, so that a letter written by any American boy, whether he is a Scout or not, to a boy in almost any other country, will be delivered to one who, in all likelihood, will send back as interesting a letter as he gets. There is no charge except for the regular postage as described in the simple rules below.

Scout officials, teachers in public and Sunday schools and leaders of boys' club work throughout the country are encouraging and assisting their boys to engage in this international correspondence. It is great fun for the boys, will enable them to understand each other and each other's country better, and will make friendships which undoubtedly will be beneficial later in various ways.

It is important that the first letter contain interesting information. A boy should write something about his city, his school, his Scout activities, (if he is a Boy Scout) and, if possible, send also a picture postcard of some local scene. If the writer is especially interested in any subject, as for instance stamps, or mechanics, or camping, or Good Turns, he should mention it. The magazine may be able to put his letter in the hands of a boy who is especially interested in the same particular subject.

Here is a splendid chance for boys to make friends all over the world. It is hoped they will take advantage of it.

What One Boy Did

All boys who read the *Boy Scout Year Book* will be interested to know just how this letter exchange works out—what fun it provides for the letter writer. Well, here's what a boy who lives in a small town in New York tells about his experiences:

To Boys' Life "Lonesome Corner":

I wish to tell you of the interesting letters I am receiving from Scouts in this country and foreign lands. A former Scout, who now lives in Dawson, Canada, writes how gold is mined. It was 26 degrees below zero at Dawson last September. Moose and caribou meat is on the bill of fare at the restaurants as a regular eatable.

A Scout has written me who lives about a hundred and ten miles from where I live, and I expect to take a bicycle trip to a point about

half way between our home towns and meet him there. We shall probably visit an aeroplane factory and the New York State Fish Hatcheries.

A German Scout writes to me in German, and tells the war news. He is going to send me some pictures of the war and some pictures of himself when he writes again.

A cycle Scout of New York City says that his troop takes trips on their bicycles to the country near New York.

A first-class Scout who lives in Sweden says that the best knives in the world are made in his home city.

A Pennsylvania Scout has invited me to go camping with his troop next summer. He is correspondent for the West Philadelphia *Scout News*.

A Scout whose home is in New Mexico and who used to live in Mexico up to the time he was driven out by Mexican soldiers, says that the soil of New Mexico is very sandy and because of this his well is 339 feet deep.

A Second-class Scout of the Canal Zone lives at Pedro Miguel, where there are locks of the Panama Canal. He has lived in the Zone six years.

Greetings to all Boy Scouts of America and foreign lands! HAROLD JENSEN.

Troop Forms an Overseas Correspondence Club

The Boy Scouts of Troop 24 of Buffalo have organized an Overseas Correspondence Club, to exchange letters through Scout Headquarters. Scout William E. Leidt, who is the president of the organization, writes: "All members are expected to write one letter per month until they have as large a list as they can conscientiously handle—that is, about three to five names, each in a different country." Already they have exchanged letters with boys in several countries in all the continents, and in some faraway ocean islands.

Other Troops, in the United States and elsewhere, have engaged in this pleasant pastime similarly. Some have the letters read at troop meetings and preserved in their headquarters scrapbook.

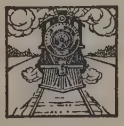
Any Boy Can Do It—This is the Way

WRITE a letter to a boy in any State, or any country. You can pick a name from the long list published each month in *Boys' Life*.

Put it in an envelope with his name and right postage, and on the back of this envelope write your own name and address. Don't seal it; place it unsealed in another envelope addressed to the boy (or the State or country) in care of *Boys' Life*, 200 Fifth Avenue, New York. Mail this; the complete address will be filled in and the letter forwarded.

If your letter is to a boy in North America or England, put on a two-cent stamp. If it is to go to any other country, five cents. There is no other charge.

The answer will come to you direct from the boy.



Games to Play

And How to Play Them

Brigand Hunting

SEND out a patrol of four Scouts, under a patrol leader, to move about within a given area of, say, one square mile, for one or one and one-half hours. Within this area are placed three or four flags representing villages, and on reaching one of these and remaining ten minutes the "brigands" can claim to have destroyed the village. After allowing the first party some fifteen minutes' start, several parties of threes are sent out with orders to locate the brigands, join forces with the other bands, and surround and capture them if possible. It is permissible for the brigands to ambush one of the smaller parties. No village can be destroyed which contains two of the pursuing Scouts.

Trained Scouts' Competition

Scouts set out at the same time each to carry a message from A to B (about three and one-half miles apart). Each competitor has to walk one mile, run one-half mile, cycle one mile (if possible, row one mile and swim twenty yards). If rowing and swimming are not possible, the last mile should be done at the Scout's pace.

Message Relay

Troop 1, Richmond Borough, New York City, has worked out several signaling games, the best of which is described here by Scoutmaster C. F. Smith.

"Message Relay" may be played in inter-patrol matches or by choosing sides by Troops, using either the Continental, Morse or Myer code.

The players must first be divided into two or more groups of equal number. Then the leaders get together and secretly make up a message or, still better, find a word containing one letter less than the number of players in each group.

Next the leaders arrange their teams behind the starting line in the order in which they are to run the relay. At the opposite end of the room, or some distance away if played outdoors, have a blackboard, paper and pencil, or a stick and a smooth spot on the ground or beach.

When the starting signal is given, each leader races to the place opposite and writes the first letter of the message, using dots and dashes. Then the leaders return and each hands the message, written on a card, to number two on his side, who runs up and writes the second letter, etc. The Scout on each side who writes the last letter returns and touches the last runner, but *does not* hand him the written message. Then the last runners race up, cipher the message and bring it to their leader.

The Scout who ciphers the message should *use his head,* and in case any of the letters have been written incorrectly he may supply the correct letters.

Each team bringing in the correct message receives five points; the team bringing in the first message, whether correct or incorrect, receives three points, and one point is scored for each team for each letter written correctly by the individual runners.

The Blind Sentry

A stands blindfolded in the middle of a circle which has a radius of fifteen yards. The remainder of the patrol now attempt to crawl through the circle, but only one can attempt it at a time. Whenever A hears anyone crawling he shouts, whereupon the crawler "freezes," and A walks out to the place from which he considers the noise proceeds. If A has successfully spotted the crawler the latter is dead, and A scores three points. If unsuccessful, A returns to the center, and the crawler continues his attempt. The patrol count two points for everyone who successfully gets through the circle. The path taken by each crawler through the circle must be of at least twenty yards in length.

"Let the Snakes Alone"

Here is a dandy game that can be played by the younger boys when a halt is made on a hike. Lay down your hikesticks on a level piece of ground about two feet apart and parallel to one another. They will look like railway ties. The object now is to do stunts over them without touching the "snakes." First you run through, then hop on right foot, then on left, run through backwards, hop through backwards, jump two at a time, go through blindfolded, and the star performance would be to go through on your hands. It's an Indian game and is called "Let the snakes alone."

Roller Skate Polo

A New York boy has formed two teams for playing "roller skate polo."

For the field he uses an old cement tennis court. At each end are the goal posts, 24 feet apart. Hard rubber balls of medium size and mallets are used, the latter in sizes to suit the individual players. Each player is "mounted" on ball-bearing roller skates. The object is to drive the ball between or over the goal posts defended by the opposing team. When a ball crosses a side line it is out of bounds. Then the side defending the goal post is entitled to a knock-in, the ball being placed on the line where it crossed, but in no case nearer the goal post than ten feet.

"Knights"

There are times when boys want a little in the way of roughhouse. Pick from two to six of the bigger boys and place them face-in on the four sides of a square six or eight yards across. About three feet behind each of these stands a smaller, lighter boy, and at a signal each of the smaller boys runs forward and leaps upon the back of his "horse." They then all sail in and attempt to unhorse one another, and the survivor is the winner.

A circle of eight or ten feet should be drawn around the contestants, and anyone getting outside this is disqualified. Without this last rule, boys are apt to hang back until most of the others are out of the way, and then come in perfectly fresh and win out. There is no rule against hair pulling, as any boy who is taken hold of in this way can easily compel his antagonist to let him go by employing similar tactics.

OBSERVATION GAMES

Bivouac Race

Two patrols are required for this practice. While on the march the Scout mas-

ter should, when he comes to suitable ground, suddenly announce, "We shall bivouac here tonight." Each patrol then erects hut, shelter, or tent, lays down beds of fern, bracken, etc., and lights fire. The patrol wins that has first completed arrangements, and has the kettle boiling.

Quartering the Troop

Send boys into small hamlet, or street in town, with orders to note the number of houses, number of rooms (this can be roughly judged by the class of house, and number of windows), etc., and to come back with a full report of how many men could be quartered there.

The Alarm

This practice can be best carried out at night when a patrol is in camp. On the Scout Master's sounding the alarm with his whistle all lights are at once turned out, equipment is hastily put on, and each one runs to the post to which he has been allotted. The last boy to reach his post should do "orderly" the following day.

Collecting Supplies

Boys go out in pairs to act as scouts in search of supplies for oncoming army. Notes are taken of bakers and butchers' shops, mills, grocers, corn dealers, farmers, with probable quantities of bread, flour, meat, groceries, hay, oats, etc. The pair furnishing the most complete and accurate report win the game.

Spies in Camp

Send Scouts into strange town or village with directions to find out the best means for a raiding party to cut off the water supply, destroy all food stores, cut off the gas supply, secure the postoffice, railway station, and other public buildings. If possible, written reports and a rough sketch map should be brought back.

Food Collecting Race

Boys start out from a point A to reach a point B some two miles away, and to return, one and a half hours being allowed for the whole journey. On the way they are expected to collect all materials they possibly can that could be utilized as food, e.g., nuts, potatoes, a handful of wheat, etc. No begging is allowed, no money must be spent, but a gift can be accepted provided a good turn is done in exchange. Points can be given for time taken and materials collected.

A STALKING GAME

Any number of boys can play this game: Divide into two groups. Have prepared number for each Scout, about three inches square, beginning at number 1, 2, 3, etc. Pin a number on the cap of each boy, in front; the even numbers on one group and the odd numbers on the other.

Rules.—Appoint judges to see that the game is played fairly. Appoint or elect captain over each division of Scouts. Give one division time to get out of sight or give them five minutes to get a certain position. At a given signal each side hunts or stalks the other.

When a Scout sees one of the opposite side he stalks him until he can see the number, and then calls it out, thus: "No. 13."

The Scout that is caught reverses his cap and quits the game.

This continues until one side is broken up or a certain time has expired, when the recall is sounded and the side having lost the most Scouts loses the game.

No Scout is allowed to cover his number with his hand or other object. Number must be kept in plain view all the time. (Except when behind trees, in bushes, etc., as it is the part of the game to keep it concealed by fair means.) No Scout is allowed to lie on the ground to hide his number.

The Scout having caught the greatest number of opponents is the honor Scout for the game. His division should be allowed to give him the proper recognition.

The game may be varied to suit the locality, lay of the land, trees, and number of Scouts. It is a fine game for a mass competition of all the Scouts of a city, as the more in the game the greater the excitement and possibilities to show skill.

Double-Domino

Four stout pieces of card, about 2½ feet high and 1 foot broad, are pierced as shown, to represent dominoes, and nailed to a simple framework. The holes made

must be somewhat larger than the rubber ball to be used.

Now this is an ordeal of skill, the object being to send the ball through the holes—though before passing through it must bounce once, and once only, on the ground. Guests stand at a given mark and have twenty tries each.

Before throwing commences, however, four dominoes, corresponding exactly with the card imitations, are placed in a small bag. Each guest draws, and the particular one he draws becomes his for "double-domino." That is to say, every ball of his which passes through the corresponding card counts two to his score instead of one.

TRACKING GAMES

Gone to Earth

Choose an area about three-quarters of a mile long and about 250 yards wide. One patrol splits up, the various members of it concealing themselves in the area. A second patrol sweeps through from end to end in extended order, and endeavors to locate the hidden Scouts. The two patrols now change places, and the victory is awarded to the one who has succeeded in finding most of the other side. It should be impressed upon the Scouts that every advantage should be taken of ditches, bushes, etc.

Crossing the Danger Zone

This game can be played in any known area, whether town or country, and after dark in a large field. One Scout A enters the area from a given side, marking the place where he enters in some suitable manner with the Scout's sign. The danger area is patrolled by three or four parties in couples. A must leave the area at a point as near as possible directly opposite to that at which he entered.